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ABSTRACT

This volume, the second in a series of five publications for use in teaching basic vocational agriculture in Mississippi secondary schools, consists of the final eight lessons in a 15-lesson introduction to livestock production. Covered in the individual lessons included in this volume are the following topics: types of livestock production enterprises, breeds of beef cattle, breeds of dairy cattle, breeds of hogs, breeds of chickens, selecting beef cattle, selecting dairy cattle, and selecting hogs. Each lesson contains some or all of the following: an introduction, terminal and specific objectives, instructional procedures, learning activities, a lesson summary, supplementary activities, transparency masters, a list of references, and a list of related visual materials. (MN)

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Lesson Plans for Teaching Basic Vocational Agriculture

Section II

Introduction to Livestock Production

Compiled by:

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Published by the:

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and

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for Vocational-Technical Education
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PREFACE

This publication is the second in a series of five publications which are designed to be used in teaching basic vocational agriculture courses in secondary schools of Mississippi. It is the result of two years of effort on the part of the author, Mississippi vocational agriculture teachers, state staff members, and teacher educators to produce materials which will improve the quality and quantity of instruction in all programs.

Vocational agriculture has been undergoing a transition during the past ten years. Our programs are being called upon to serve a wider population of students with varying occupational goals. We are being called upon to provide training which is **directly related** to the preparation of an individual for employment. This instruction must be related to the occupation or occupations for which the students are being trained.

These materials are designed to assist teachers in providing such training. They are, to as great an extent as possible, skill oriented. Most of the lessons are devoted to teaching a student **how** to do something - evaluate livestock, select seed, make soil test, use hand tools, etc. In most instances, however, the lesson also attempts to provide knowledge of basic principles associated with this skill.

ACKNOWLEDGMENTS

This publication is the result of a cooperative effort between teachers, teacher educators, and state staff members to update programs of basic vocational agriculture throughout Mississippi. The author wishes to express his thanks and acknowledgment to the following persons for their efforts and advice in developing these materials:

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SCOPE

Section II of **Lesson Plans for Basic Vocational Agriculture** is designed as an introduction to the major livestock enterprises in Mississippi. The lessons inside this publication focus on the nature of the different enterprises, the breeds of animals used in these enterprises, and the basics of animal selection. Each lesson can be briefly described as follows:

Lesson 8. Types of Livestock Production Enterprises. This lesson is designed to provide an introduction to the major livestock enterprises in Mississippi. Scope of each enterprise and the nature of the production process is discussed.

Lesson 9. Breeds of Beef Cattle. This lesson provides information related to the major breeds and classes of beef cattle. Characteristics such as size, color, carcass quality, disposition, and origin are provided for each breed.

Lesson 10. Breeds of Dairy Cattle. This lesson provides information on the five major dairy breeds and some of the secondary breeds. Milk production, butterfat levels, and other characteristics are discussed.

Lesson 11. Breeds of Hogs. Different breeds of hogs and their characteristics are discussed in this lesson. Information is provided on the older established breeds, newer breeds, and some of the hybrid strains.

Lesson 12. Breeds of Chickens. The common classes and breeds of chickens are briefly discussed. Breeding practices of the modern industry and the hybrid chickens are also explained.

Lesson 13. Selecting Beef Cattle. This lesson is designed to introduce students to modern selection practices. Visual appraisal for conformation and defects is discussed as are production testing methods.

Lesson 14. Selecting Dairy Cattle. Basics of selecting dairy cattle are discussed in this lesson. Conformation and defects are explained as well as other methods for selecting animals.

Lesson 15. Selecting Hogs. This lesson covers the basics related to selection of hogs. The ideal type is discussed and defects are listed. Also the use of production records and systems are explained.

USING THIS PUBLICATION

These materials are designed to be used in teaching courses in basic vocational agriculture in secondary schools in Mississippi. In using these materials, each teacher is advised to remember the following pointers:

1. The materials are not a total curriculum for teaching basic vocational agriculture. No statewide effort at standardization of curriculum will ever produce a curriculum which will meet the needs of every program in the state. Every teacher is advised to use the parts of these materials which are related to the local program and to add any units or lessons which are not provided.
2. Each lesson is designed to be adapted to local needs. Every teacher is encouraged to review each lesson prior to teaching it and to add any objectives or teaching material which is needed in the local situation. Spaces have been left in the text of the materials to add notes and objectives.
3. The materials may be used in first or second year basic vocational agriculture courses. When first discussed, these materials were planned for use in first year courses only. The volume of the material, however, is more than can be taught in one year. Teachers are advised to use materials in both first and second year courses.
4. The materials are performance-oriented. The lessons are aimed at developing some observable performance within the student. In many cases, this performance goes beyond passing a written test to include some type of "hands-on" activity. Teachers should make prior preparation to include these activities before teaching the lesson.

Each lesson in this publication was developed using the same format and consists of an introduction, terminal and specific objectives, instructional procedures, learning activities, supplementary learning activities, and supplementary learning aids. Each of these sections is described below.

1. Introduction. The introduction usually consists of two paragraphs. The first paragraph provides some background information relating to the topic to be discussed. The second paragraph states the goal of the lesson in general terms.
2. Objectives. Each lesson contains a terminal objective and a set of specific objectives which should be followed in order to accomplish this terminal objective.
3. Instructional Procedures. This section of each lesson is divided into a group of teaching tasks and steps to accomplish each task. These procedures are suggested procedures only. Teachers are encouraged to "review the entire lesson and determine if additional material is needed."
4. Learning Activities. This section contains the instructional materials needed to teach the lesson. For the most part, the question and answer type format which has been used in previous Mississippi reference units is used along with student assignments and job sheets to emphasize certain points. Full page transparency masters are included in the text of this section.
5. Supplementary Learning Activities. Suggestions are made in this section concerning additional activities which can be used to supplement the information provided by the lesson text.
6. Supplementary Learning Aids. A list of supplementary reference materials including publications and available films is included in this section.

LESSON 8

Types of Livestock Production Enterprises

I. **Introduction:**

The importance of the livestock industry to the agricultural economy of Mississippi must not be overlooked. In the past thirty years the move away from a cotton economy toward diversified agriculture has increased. During the late 1960s and early 1970s, income from livestock sales exceeded income from crop products. In 1979, income from livestock sales was over $891,000,000, while income from crops reached a total of $1,192,000,000. TM 8a shows income from major classes of enterprises with the exception of catfish farming.

This lesson is designed to provide an introduction to the livestock industry in Mississippi. Major livestock enterprises to be discussed include beef cattle, dairy cattle, hogs, poultry, and catfish.

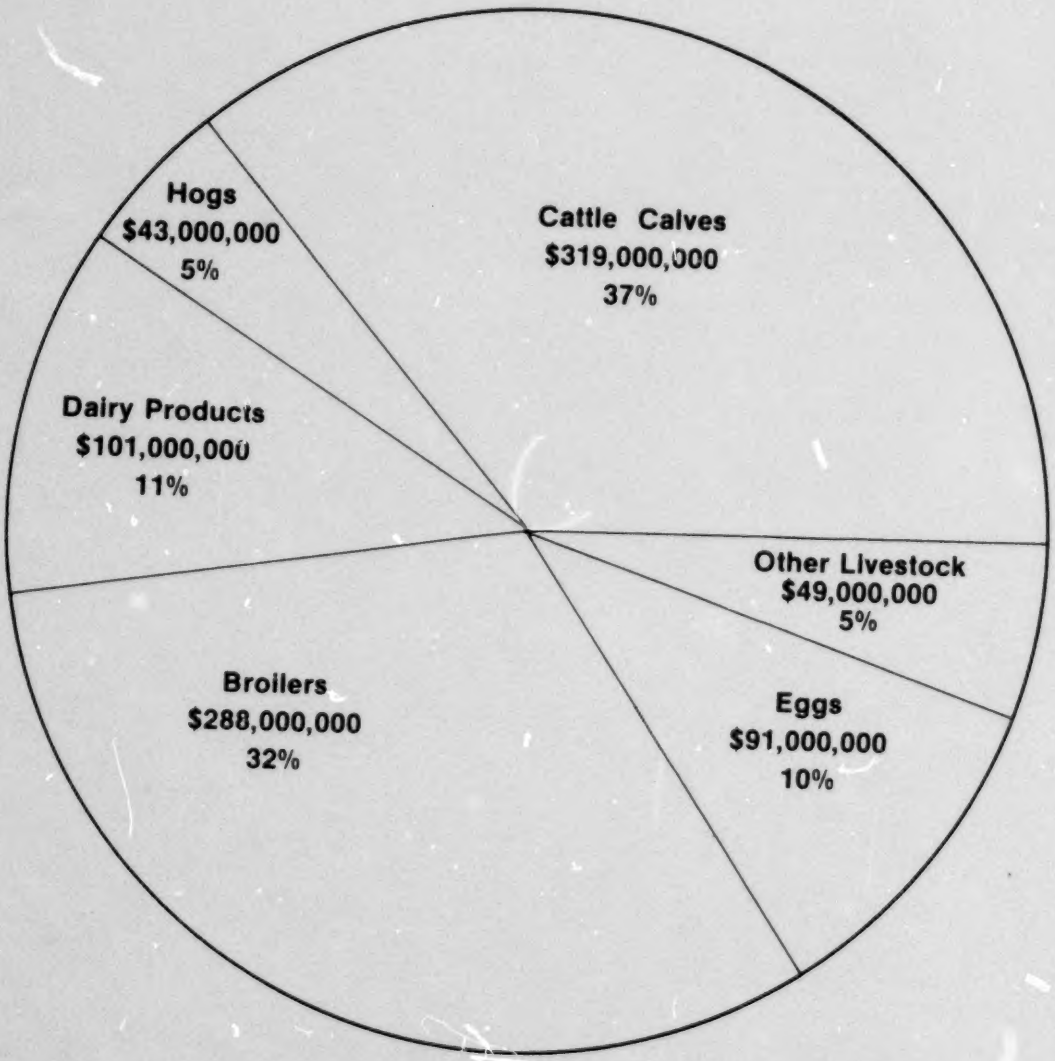
II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to describe the nature of the major livestock enterprises in the state. In describing the nature of such enterprises, the student will discuss the scope and size of the enterprise, identify the products produced by the enterprise, and discuss the nature of the production process.

B. **Specific objectives.** Upon completion of this lesson, the student should be able to:

1. Define terms related to livestock production.
2. Describe the nature of beef cattle production.
3. Describe the nature of hog production.
4. Describe the nature of poultry production.
5. Describe the nature of the dairy cattle industry.
6. Describe the nature of catfish production.
7. Describe the nature of several minor livestock and livestock products enterprises.
8.
9.
10.

INCOME FROM LIVESTOCK SALES
1979



TOTAL INCOME $891,000,000

III. Instructional Procedures

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review the entire unit and determine if additional material is needed. 2. Prepare transparencies.
B. Introduce the lesson.	1. Ask students to list major classes of livestock enterprises. 2. Discuss importance of livestock to Mississippi economy as found in Introduction. Use TM 8a. 3. Identify Lesson Objectives. 4. Discuss new terms and definitions.
C. Discuss nature of beef cattle production in Mississippi.	1. Discuss materials found in Section B of Learning Activities related to overall importance of beef industry. 2. Ask students to identify different beef enterprises in local community. 3. Define the different types of beef enterprises listed in Section B of Learning Activities.
D. Discuss the nature of hog production in Mississippi.	1. Discuss importance of hog production in the state as compared to other states as found in Section C of Learning Activities. 2. Ask students to identify hog production enterprises in the local community. 3. Define the different types of hog enterprises listed in Section C of Learning Activities.

Teaching Tasks	Steps to Accomplish Tasks
E. Discuss the nature of the poultry industry in Mississippi.	1. Discuss importance of poultry in the state and integration in the poultry industry as found in Section D of Learning Activities. 2. Ask students to identify poultry enterprises in the local community. 3. Discuss different types of poultry enterprises found in Section D of Learning Activities.
F. Discuss nature of the dairy industry in Mississippi.	1. Discuss the nature of dairy farming in the state. See Section E. 2. Ask students to describe dairy farms in the local community. 3. Discuss the types of dairy enterprises in the state.
G. Discuss the nature of the catfish industry in the state.	1. Discuss the nature of the catfish industry in the state. 2. Ask students to identify and describe catfish enterprises in the local community. 3. Discuss the types of catfish enterprises as found in Section F of Learning Activities.
H. Discuss the nature of minor livestock enterprises in the state.	1. Define minor enterprises as discussed in Section G of Learning Activities. 2. Ask students to identify other livestock enterprises found in the local community. 3. Discuss minor enterprises found in Section G of Learning Activities. 4. Include other enterprises which may be found in the local community.

IV. **Learning Activities:**

A. **New terms and definitions:**

1. **Livestock** - A term used to describe any animal raised on a farm for business purposes including cattle, swine, sheep and goats, horses and mules (when raised for sale or work purposes), chickens, turkeys, catfish, bees, etc. Dogs, cats, and horses which are for strictly recreational or pleasure purposes are not included in this definition.
2. **Livestock products** - Any product obtained from livestock which can be marketed including meat, milk, eggs, wool, honey, etc.
3. **Purebred** - An animal whose ancestors were all members of the same breed of livestock. Purebred animals are considered "registered" if a description of the animal and its parents and grandparents is recorded by a breed association.
4. **Feeder calves** - Beef cattle weighing from 300 to 500 pounds which have been weaned from their mother cows.
5. **Stocker yearlings** - Beef cattle weighing from 500 to 700 pounds which are ready for fattening.
6. **Slaughter cattle** - Beef cattle weighing from 900 to 1000 pounds which have been fattened and are ready for slaughter.
7. **Feeder pigs** - Pigs weighing approximately 25 to 40 pounds which are ready for full-feeding.
8. **Market hogs** - Hogs weighing approximately 220 pounds which have been fattened and are ready for slaughter.
9. **Castrate** - To remove the testicles.
10. **Heifer** - A young female cow which has not calved.
11. **Steer** - A male bovine animal which was castrated before it reached maturity.
12. **Cow** - A female bovine which shows evidence of having had one or more calves.
13. **Bull** - A mature, male bovine animal.
14. **Calf** - Cattle under one year of age.
15. **Yearling** - Cattle between one and two years of age.
16. **Gilt** - A female hog which has not had pigs.
17. **Shoat** - A young hog usually less than one year old.
18. **Sow** - A female hog which has had one or more litters of pigs.
19. **Barrow** - A male hog which was castrated before reaching maturity.
20. **Boar** - A mature male hog which has not been castrated.
21. **Ewe** - A female sheep or lamb.
22. **Ram** - A mature male sheep.
23. **Lamb** - A young sheep usually less than one year old or without permanent teeth.
24. **Wether** - A male lamb which has been castrated before reaching maturity.
25. **Broiler** - A young chicken eight to ten weeks of age raised for meat production.

26. **Hen** - A mature female chicken.
27. **Rooster** - A mature male chicken.
28. **Pullet** - A female chicken less than one year of age.
29. **Cockerel** - A male chicken less than one year of age.
30. **Stallion** - A mature male horse.
31. **Mare** - A mature female horse.
32. **Gelding** - A male horse which was castrated before reaching maturity.

B. **What is the nature of beef cattle production in Mississippi?**

Beef cattle production is the most important of the cattle enterprises in Mississippi. The state ranks 23rd in the nation in cattle numbers with an estimated 1,810,000 cattle and calves in 1980. In recent years low prices have caused a reduction in the number of cattle in the state, but improving market conditions are expected in the future. Beef cattle production on Mississippi farms can be classified into four different enterprises:

1. **Cow-calf enterprises.** Mississippi has 901,000 beef cattle which calved in 1979. This places the state in 14th place in the United States in estimated numbers of beef cattle that had calved. While beef cattle numbers have declined, this enterprise is still the most important beef enterprise in Mississippi. Commercial or crossbred cattle are fed on pasture, winter grazing, or hay and protein supplements. Calves are normally born in the spring and remain with their mothers until fall when they are weaned at weights of 300-500 pounds. Some producers have their calves "dropped" in the fall and then wean and sell the next spring when prices are usually highest. Calves are usually weaned (removed from their mothers) at an age of six to eight months. After weaning, the calves are usually either sold to a stocker producer or placed in a stocker enterprise on their home farm.

2. **Stocker enterprises.** No figures are available as to the number of stocker enterprises in the state. This enterprise involves placing weaned feeder calves on pasture, winter grazing, or hay and protein supplement rations and allowing them to grow to yearlings with a weight of 500 to 700 pounds. Usually the six- to eight-month old feeders must remain in the stocker enterprise for six to eight additional months before reaching their desired weight. The yearlings are then usually sold to feedlots for finishing, although some may go directly to slaughter houses.

3. **Slaughter cattle enterprises.** Most beef purchased at the supermarket is a product of a slaughter cattle enterprise or feedlot. Stocker yearlings, and in many cases feeder calves, are placed on high quality rations which develop the fat covering which is desirable to most consumers. Usually the cattle are fattened or "finished" on rations containing corn, high quality hay or silage, and protein supplements. Since the large amounts of grain required for feeding are not

available in Mississippi, this enterprise does not play an important part in the beef production of the state. Most of the cattle on feed in the U.S. are found in the corn and milo producing states of Texas, Oklahoma, Iowa, Kansas, Nebraska, and Colorado. Most of the feeder calves and stocker yearlings produced in this state usually are delivered to the feedlots of these states.

4. **Purebred cattle enterprises.** Purebred cattle farmers raise high quality "registered" animals for use as herd replacements. Young bulls and sometimes heifers and cows are sold to commercial cow-calf producers to be used as breeding animals. No figures are available on the number of purebred producers in the state, but there are several major producers in Mississippi. The production of purebred beef cattle is the most costly of all the beef enterprises but also offers the possibility of highest returns. Since the commercial producers depend upon the purebred breeders for bulls, this segment influences the other segments of the industry.

C. **What is the nature of hog production in Mississippi?**

During the last twelve years the number of hogs on Mississippi farms has continued to drop. In 1967, the USDA estimated that there were 740,000 hogs and pigs in Mississippi. In 1979 the estimate had decreased to 440,000. These figures reflect a nationwide trend toward decline in hog numbers.

Since hog production requires a large amount of feed grains, Mississippi has never been a major pork producing state. Most pork production is located in the Corn Belt states of Iowa, Illinois, Missouri, Indiana, and Minnesota. These states produce over half of the hogs in the United States.

Hog production enterprises have changed in Mississippi during the past twenty years. In the past, many farmers kept a few hogs on hand primarily for home usage. This practice is rapidly disappearing and the practice of raising feeder pigs and market hogs as a major income producing enterprise is growing.

In general, most hog production in the state can be divided into two enterprises:

1. **Feeder pig enterprises.** This corresponds to the cow-calf enterprise. The farmer keeps a herd of sows and boars. Usually each sow will produce two litters of approximately six to eight pigs each per year. Pigs feed on the sow's milk and pig starter rations until they reach a weight of 25-40 pounds. Normally this weight is reached in five to six weeks. During this period of time, the pigs are castrated, vaccinated, wormed and weaned. At the end of this period, the pigs are ready to be sold or placed in a market hog enterprise. In 1979 there were an estimated 70,000 hogs kept for breeding in the state and some 145,000 feeder pigs.

2. **Market hog enterprises.** Market hog enterprises may be operated in connection with a feeder pig enterprise on the same farm or as an enterprise to itself with the operator buying feeder pigs from outside sources. Normally the feeder pigs are placed in confined lots and fed high energy rations composed of corn, plant and animal protein sources, and mineral and vitamin mixes. Pigs are fed until they reach a weight of 220 pounds when they are ready to be marketed for slaughter. Usually this will require a feeding period of 16 to 18 weeks. Total time from birth to market should be 5½ to 6 months. In 1979 the estimated number of market hogs weighing 60 pounds or more in the state was 225,000.

D. **What is the nature of the poultry industry in Mississippi?**

Poultry production is a very important livestock industry in Mississippi. In 1979 total income from the sale of poultry and eggs in the state was $379,522,000 with broiler sales alone of $288,206,000, exceeding all other livestock enterprises except cattle and calves. The poultry industry is also the most intergrated agricultural industry with large commercial firms controlling the production of poultry products from hatchery to wholesale markets. Most producers in the poultry industry today have contracts with these firms. Under these contracts,the firms own the chickens and provide the feed and other supplies necessary to grow them. The producer provides the facilities and labor necessary for caring for the chickens and receives a specified amount of money for these services. A number of independent egg producers still operate but almost all broiler production is controlled by 14 firms in the state.

There are several types of poultry enterprises which are of major importance in Mississippi including:

1. **Hatchery egg enterprises.** These producers maintain flocks of hens and roosters which produce fertile eggs for hatcheries. Usually these eggs are produced under contract with the producer supplying only labor and facilities. The producer feeds the chickens and picks up and processes the eggs. The hatchery owns the chickens and provides feed and supplies. No figures are available on the number of hatchery eggs produced but an estimated 274,501,000 broiler-type and 12,695,000 layer-type chicks were hatched by Mississippi commercial hatcheries in 1979.

2. **Market egg enterprises.** These producers maintain flocks of hens which produce infertile eggs for consumption as food. Producers may be under contract with a firm or may be independent. Usually the producer is responsible for feeding and caring for the flock; picking up the eggs; and washing, grading, sizing, and packaging the eggs. During 1979, an average number of 6,900,000 layers produced an average of 137,750,000 eggs per month.

3. **Broiler enterprises.** Mississippi is among the top ten states in broiler production. In 1979 an estimated 272,646,000 broilers were slaughtered in Mississippi producing 762,823,000 pounds of ready-to-cook chicken. As previously mentioned, almost all of the broilers produced in the state are grown under contract to 14 leading poultry firms. The producer supplies only labor and facilities to house and care for the birds. The firm supplies the chicks, feed, and supplies and delivers and picks up the birds. The farmer receives a set amount for services rendered.

4. **Turkey enterprises.** Turkey production in Mississippi has declined to the point that no accurate figures can be obtained on the number of turkeys in the state. Most of the turkeys in the state are produced on a home flock basis and no major commercial production exists at the present time. Major production does exist in the Northeastern U.S. and the Mid-West.

5. **Other poultry enterprises.** Perhaps the most important of the other miscellaneous poultry enterprises is the production of quail. While a few commercial producers exist, many people produce quail as a part-time enterprise. Most market their quail in the local area as live birds or home-dressed quail. Other minor enterprises of no economic importance include ducks, geese, and Guinea fowl enterprises.

E. **What is the nature of the dairy cattle industry in Mississippi?**

Because of the increasing costs of labor, feed, and other inputs, the dairy industry in the state continues to decrease. From 1956 until 1979, the number of Grade A dairy herds decreased from 4,197 to 994. The number of cows in the state has continued to decrease, but the average annual production of milk per cow has risen. There are three types of dairy enterprises in the state:

1. **Grade A dairy enterprises.** These enterprises produce fluid milk which is used for drinking and the production of ice cream, half-and-half, and other products. To qualify for the rating "Grade A," the facilities, cattle and milk must meet minimum standards set by the State Board of Health. State health imspectors inspect the facilities at least once each month to make sure they are sanitary. Milk samples are taken to ensure that the number of bacteria in the milk is under the acceptable limit. Cows are tested to make sure they are free of tuberculosis and mastitis. Grade A milk is sold at a higher price than manufacturing milk.

2. **Grade C enterprises.** Milk from Grade C enterprises is called manufacturing milk and is used to manufacture sweetened condensed milk, cheese, and other processed dairy products. In contrast to Grade A enterprises, few regulations exist for Grade C enterprises concerning sanitation or facilities. The number of Grade C dairies in the state has dropped even more rapidly than the number of Grade A dairies.

3. **Herd replacement enterprises.** Many dairy farms also realize some income from the sale of replacement heifers. Most farmers keep their best heifers for use as replacements in their own herds and sell any surplus. Some producers with superior herds also sell bulls.

F. **What is the nature of the catfish production industry in Mississippi?**

The production of commercial catfish in Mississippi continues to grow dynamically. Mississippi today is one of the leading states in the United States in catfish production. In 1980, there were an estimated 40,369 acres of ponds being used to grow catfish. Catfish production involves two major enterprises:

1. **Fingerling production.** In 1980, an estimated 3,932 acres were being used to produce catfish fingerlings. A fingerling is a young catfish which is from 1 to 10 inches in length. To produce fingerlings, the farmer usually uses small ponds of one acre or less in size. Each pond is stocked with mature male and female brooder fish weighing at least 3 pounds. Some type of spawning container is provided for every two pairs of brood fish. The female catfish lays eggs in these containers and the males fertilize these eggs and protect the nest. Fertilized eggs may be left in the containers or removed to special holding tanks to hatch. Hatching occurs in seven to eight days and the young fish are called fry. Within four to eight months the fry will have reached the fingerling stage and will range in size from four to ten inches. The fingerlings are then harvested and graded by sizes. A number three fingerling is approximately three inches long and a number eight fingerling is approximately eight inches long. Fingerlings are sold to commercial producers and to farmers and others who raise catfish for recreational use.

2. **Food fish production.** In 1980, an estimated 36,430 acres of water were being used to produce food fish. Food fish are catfish weighing three-fourths pounds or more. Some catfish are marketed at weights up to ten pounds. Fingerlings are obtained from fingerling producers and stocked in ponds ranging from one to 40 acres. Stocking rates range from 1,500 to 2,000 fingerlings per acre. Normally the ponds are stocked in the spring. During the spring, summer, and fall the fish are fed a catfish feed and will normally weigh about one pound at the end of a 210 day growing season. Catfish do not eat well during the colder months of the year and, therefore, do not grow. When the fish reach a desirable size, they are seined out of the pond and sold. Some producers allow the public to catch fish on a pay basis. During the early years of commercial production, most catfish were sold in the local area as live or fresh-dressed fish. Today more and more fish are being processed by commercial firms and marketed as a frozen product. Some fish are now being marketed as canned catfish.

G. What is the nature of minor livestock production enterprises in Mississippi?

There are several enterprises of minor economic importance in the state. Most of these enterprises can be classified as part-time jobs for supplementary income. In some cases, a few full-time producers may exist but their numbers and production have a very small effect on the economy. Minor livestock enterprises include:

1. **Horse enterprises.** While horses play an important recreational role in Mississippi, the state is not a site of major horse production. Some purebred producers do exist in the state, but their numbers are few. Some farmers may keep horses as a supplementary enterprise.

2. **Sheep enterprises.** The number of sheep in Mississippi continues to decrease. No significant numbers of sheep exist on a commercial basis in the state. It is estimated that the total number of sheep does not exceed 6,000 head.

3. **Beekeeping enterprises.** In 1979 there were an estimated 49,000 colonies of bees in the state which produced an estimated $994,000 in honey and $60,000 in beeswax. As in the case of other minor enterprises, beekeeping is usually a hobby or supplementary enterprise. Very few full-time beekeepers are found in the state.

H. Lesson Summary

Key points to remember:

1. The livestock industry in Mississippi is of major importance to the agricultural economy of the state, accounting for 40 to 60 percent of the income from agricultural products annually.

2. The cow-calf enterprise is the most important beef cattle enterprise in the state. Other major beef enterprises include stocker yearling enterprises and purebred cattle production.

3. Hog production is of significance in the state although the number of hogs on farms has declined. Enterprises associated with hogs include feeder pig and market hog production.

4. The poultry industry produces more income than any other class of livestock enterprise. Mississippi is one of the top ten poultry-producing states. Major enterprises include broiler production, hatchery egg production, and market egg production.

5. The number of dairy herds in the state continues to decline due to the rising costs of feed, labor, and other inputs. Most dairies in Mississippi today produce Grade A milk.

6. Mississippi is the leading state in the nation in catfish production. Major enterprises include fingerling production and food fish production.

7. Minor livestock enterprises in Mississippi include horses, sheep, and beekeeping.

V. **Supplementary Activities:**

A. For the more important enterprises in the community, the teacher may want to arrange a field trip to nearby farms or invite selected farmers to the class to discuss their operations.

B. Make a slide set of major enterprises in the community, illustrating different steps in the production processes.

VI. **Supplementary Learning Aids:**

A. Transparency Masters

TM 8a Total Income from Livestock Sales

B. References

Bundy, Clarence E. and Wiggins, Ronald W. **Livestock and Poultry Production**, 3rd. ed. Englewood Cliffs, NJ : Prentice-Hall. 1968.

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C. Visuals

Films available from R/CU Film Library

1. "No Limit to Catfish Farming"
2. "The Greatest Milking Hand"

LESSON 9

Breeds of Beef Cattle

I. **Introduction**

Prior to 1965 if a person talked about beef cattle breeds, the major ones in the United States could be stated in three simple words — Hereford, Angus, and Shorthorn. Today, while these breeds continue to play a dominant role in commercial cattle production, a number of other breeds also have an important role in the modern beef industry. The increase in the number of new beef breeds in the state is directly related to the increase in crossbreeding of beef cattle. Some producers are using artificial insemination to mate bulls of the new breeds to Hereford, Angus, and Shorthorn cattle to produce a crossbreed calf.

This lesson is designed to introduce the student to the various breeds of beef cattle being produced in Mississippi and to the characteristics of these breeds.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to identify and describe the different classes of beef cattle and the different breeds associated with these classes. The description should include place of origin, physical description, size of mature animals, and other important characteristics.

B. **Specific objective.** Upon completion of this lesson, the student should be able to:

1. Define terms related to beef cattle breeds.
2. Identify the four major classes of beef cattle breeds.
3. Identify and describe major English breeds of beef cattle.
4. Identify and describe major European breeds of beef cattle.
5. Identify and describe major Indian-African breeds of beef cattle.
6. Identify and describe major American breeds of beef cattle.
7.
8.
9.

III. **Instructional Procedures:**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire unit and determine if additional material is needed. 2. Write to breed associations asking for pictures and additional information on breeds. See Appendix at the end of this lesson for addresses.
B. Introduce the lesson.	1. Discuss material found in Introduction. 2. Identify Lesson Objectives. 3. Define new terms and definitions.
C. Name major classes of beef breeds.	1. Explain that beef cattle are classed by place of origin. 2. List the major classes of beef cattle as described in Learning Activities, Section B (Use TM 9a).
D. Describe the major English breeds of beef cattle.	1. Explain that English breeds play a dominant role in the American beef industry. 2. Ask students to name common English breeds found in local community. 3. Describe the major English breeds of beef cattle using information under Section C of Learning Activities.

Teaching Tasks	Steps to Accomplish Tasks
E. Describe the major breeds of European beef cattle	1. Explain that European breeds have grown in importance in crossbreeding programs over the past 10 years. 2. Describe the major European breeds of beef cattle using information in Section D of Learning Activities.
F. Describe the major breeds of Indian-African beef cattle.	1. Explain that Indian-African breeds were developed from a different stock of cattle and offer a greater resistance to insects, parasites, diseases, and hot weather. 2. Discuss the breed listed under Section E of Learning Activities.
G. Describe the major breeds of American beef cattle.	1. Explain that the American breeds are scientifically designed to suit a particular section of the country. 2. Describe major American breeds using material in Section F of Learning Activities.
H. Discuss the role of beef breeds in the modern beef industry.	1. Discuss how exotic breeds are Americanized by breeding. (Section G.) 2. Discuss procedures for crossbreeding. 3. Discuss how crossbreeding depends upon purebred bulls.
I. Summarize the lesson.	1. Discuss key points to remember as found in Lesson Summary, Section H of Learning Activities.

III. **Learning Activities:**

A. **New terms and definitions**

1. **Beef cattle.** Cattle with long, muscular, block-shaped bodies which are raised to produce meat.
2. **Classes of beef cattle.** Beef cattle which originated in a specific geographic area and possess common characteristics.
3. **Breeds of beef cattle.** A selected group of animals within a species that have a common origin and certain physical characteristics which are readily distinguished. Breeds are developed by maintaining a group of cattle separate from other cattle and interbreeding within the group.
4. **Inbreeding.** A process by which cattle are mated to close relatives in order to concentrate desirable traits.
5. **Linebreeding.** The mating of distantly related animals of the same breed to produce a family or line of animals.
6. **Crossbreeding.** The systematic mating of purebred bulls of one breed to purebred or high-grade cattle of another breed.
7. **Temperament.** The degree to which an animal becomes nervous or excited when around people or other animals. Also called disposition.
8. **Carcass quality.** The degree to which the carcass (body) of an animal is well-muscled, fat and tender.

B. **What are the common classes of beef cattle breeds? (See TM 9a)**

1. **English beef cattle breeds.** Most of the beef cattle in Mississippi and the United States fall into this classification. The English breeds were developed in the United Kingdom which includes England, Scotland, and Wales. In general most of the English breeds are small to medium sized animals with generally mild temperament. Carcass quality for the English breeds as a group is excellent. Prominent English breeds include: Angus, Hereford, Shorthorn.
2. **European beef cattle breeds.** Prior to the late 1960's, very few European beef cattle were found in the United States with the exception of the Charolais breed. With the growth of crossbreeding programs, more and more producers began to use the large European breeds to provide new genetic material. As a group the European cattle are large in size and possess a very mild temperament. Most are exceptionally good milkers and at the same time are heavily muscled. Many of the European breeds were originally used as triple-purpose animals to provide milk, meat, and draft power.
3. **Indian-African beef cattle breeds.** The English and European cattle breeds, both beef and dairy, are descendants of a pre-historic ox called **bos tarus.** The Indian-African breeds, on the other hand, are descendants from a different species called **bos indicus**. Outstanding characteristics of these breeds are a large hump over the shoulders and a general resistance to heat, insects, and diseases. Unfortunately, these cattle tend to have nervous dispositions and produce lower quality carcasses than other classes.

CLASSES OF BEEF CATTLE BREEDS

1. English Breeds
   a. Origin — British Isles
   b. Small to medium size with mild temperament
   c. Excellent carcass quality

2. European Breeds
   a. Origin — Europe (France, Italy, Germany, Switzerland)
   b. Heavily muscled, good milkers

3. Indian-African Breeds
   a. Origin — India or Africa
   b. Medium to large animals with nervous temperament
   c. Resistant to insects and diseases, lower quality carcasses than other classes

4. American Breeds
   a. Origin — United States and Canada
   b. Medium to large animals
   c. Carcass quality and temperament vary

4. **American beef cattle breeds.** A number of beef cattle breeds have been developed in the United States in the past 100 years. Some of these breeds are simply polled (hornless) lines of English beef cattle. Others are the result of a cross-breeding program between Indian cattle and English or European cattle. In general the American breeds are medium to large size cattle which produce average quality carcasses.

C. **What are the major breeds of the English class of beef cattle? (See TM 9b)**

1. **Herefords.**
   a. Origin — Herefordshire County is southwestern England. First herds founded around 1740.
   b. Breed characteristics — Red hair coat with characteristic "white face." White underline, crest and switch. Horned.
   c. Size — Small to medium size. Mature bulls weigh 1200 - 1800 pounds. Mature females weigh 800-1000 pounds.
   d. Other characteristics — Very adaptable to climate and range conditions, very high carcass quality, low to average milking ability.

2. **Angus**
   a. Origin — Northeastern Scotland. First herds developed around 1815.
   b. Breed characteristics — Solid black, smooth hair coat. Polled.
   c. Size — Smallest of major beef breeds. Mature bulls weigh 1100-1500 pounds. Mature females weigh 750-900 pounds.
   d. Other characteristics — Very high carcass quality, very good breeding performance, very resistant to pink eye, very adaptable to range and climate.

3. **Shorthorn**
   a. Origin — Northeastern England. First herds developed around 1780.
   b. Breed characteristics — Wide color variation ranging from almost solid red to solid white or any combination.
   c. Size — Largest of the English breeds. Mature bulls weigh from 1500-2000 pounds. Mature females weigh 900-1200 pounds.
   d. Other characteristics — Very good breeding performances, good milkers, above average carcass quality, adaptable to range and climate.

TM 9b

ENGLISH BEEF BREEDS

Breed	Origin	Physical Description	Size	Characteristics
Hereford	Southwest England (1740)	Red with white face, belly, headcrest and tail switch. Horned.	Small to Medium (1000 - 2000 lbs.)	Very adaptable to climate. Very high carcass quality. Low to average milker.
Angus	Scotland (1815)	Solid black, smooth hair coat. Polled.	Small (900 - 1800 lbs.)	Very high carcass quality. Adaptable to wide climate range.
Shorthorn	Northeast England (1780)	Range from almost solid red to almost solid white. Horned.	Medium (1000 - 2000 lbs.)	Good breeders, good milkers, above average carcass quality. Very adaptable.

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D. **What are the major breeds of the European class of beef cattle? (See TM 9c)**

1. **Charolais**

   a. Origin — East central France. Developed around 1760.

   b. Breed characteristics — White to cream colored animals with black noses. Horned.

   c. Size — Medium to large size animals. Mature bulls weigh 1700 to 2200 pounds. Mature cows weigh 1200 to 1700 pounds.

   d. Other characteristics — Average breeding performances, feeding performance, and carcass quality.

2. **Chianina**

   a. Origin — Central Italy. Developed during Roman Empire. Used for meat, milk, and work.

   b. Breed characteristics — Solid white horned cattle. Very large, standing 5 to 5½ feet tall.

   c. Size — The largest cattle breed. Mature males weigh 2500-3000 pounds; females weigh 1700-2100 pounds.

   d. Other characteristics — Average carcass quality. Very mild disposition. Very trim lean bodies.

3. **Limousin**

   a. Origin — South Central France. Developed for draft or beef.

   b. Breed characteristics — Large wheat-colored animals ranging from light red to yellow. Predominantly horned.

   c. Size — Large cattle. Males weighing 2200-2600 pounds; females weighing 1200-1500 pounds.

   d. Other characteristics — Long body with heavily muscled hindquarters, high growth rate, good milking quality.

4. **Maine-Anjou**

   a. Origin — France. Originated by crossing native cattle with English Shorthorns. Used for meat, milk, and work.

   b. Breed characteristics — Red bodies with white markings. Horned.

   c. Size — Large animals. Mature males weigh 2200-2500 pounds; mature females weigh 1400-1700 pounds.

   d. Other characteristics — Typical beef conformation but produce large amounts of milk.

5. **Simmental**

   a. Origin — Switzerland. Developed for milk, meat, and work.

   b. Breed characteristics -- Usually red and white spotted with white faces. Red varies from dark red to almost yellow.

   c. Size — Large cattle. Mature bulls weigh 2300-2700 pounds. Mature cows weigh 1400-1800 pounds.

   d. Other characteristics — Long bodied, heavily muscled animals. Good milkers.

TM 9c

EUROPEAN BEEF BREEDS

Breed	Origin	Physical Description	Size	Characteristics
Charolais	France 1760	White to cream color with black noses. Horned.	Medium to large (1400 - 2200 lbs.)	Average feeding and breeding performance. Average carcass quality.
Chianina	Italy (Roman Empire)	Solid white, Horned. Very tall.	Large (1800 - 3000 lbs.)	Mild disposition, trim, lean bodies. Average carcass quality.
Limousin	France	Light red to yellow. Horned.	Large (1400 - 2600 lbs.)	Long body, heavily muscled hind quarters. High growth rate. Good milkers.
Maine-Anjou	France	Red with white markings. Horned.	Large (1500 - 2600 lbs.)	Very good milkers.
Simmental	Switzerland	Red or yellow and white spots with white faces.	Large (1600 - 2700 lbs.)	Long bodied, heavily muscled. Good milkers.

E. **What are the major breeds of the Indian-African class of beef cattle? (See TM 9d)**

1. **Brahman**

   a. Origin — India. American Brahmans originated from several breeds of Indian Brahmans which were imported in the 1800's and early 1900's.

   b. Breed characteristics — Light gray to dark red in color, drooping ears, prominent hump over shoulders, loose skin.

   c. Size — Medium size cattle. Mature bulls weigh 1400-2000 pounds; females weigh 1000-1400 pounds.

   d. Other characteristics — Poor to average carcass quality. Highly resistant to insects; diseases; parasites; and hot humid weather. Nervous dispositions.

F. **What are the major breeds of the American class of beef cattle? (See TM 9e)**

1. **Polled Herefords**

   a. Origin — Iowa. Developed by Warren Gammon around 1900. Oldest modern breed of American beef cattle.

   b. Breed characteristics — Same as for horned Herefords except Polled Herefords are naturally hornless.

   c. Size — Same as for horned Herefords.

   d. Other characteristics — Same as for horned Herefords except Polled Herefords often lack the amount of fleshing found in their horned cousins.

2. **Polled Shorthorn.**

   a. Origin — Midwestern U.S. Developed around 1890.

   b. Breed characteristics — Same as for horned Shorthorns except naturally hornless.

   c. Size — Same as horned Shorthorn.

   d. Other characteristics — Same as for horned Shorthorns.

3. **Santa Gertrudis.**

   a. Origin — King Ranch, Texas. Developed around 1910 by crossing Brahman and Shorthorn cattle. Present breed represents 5/8 Shorthorn and 3/8 Brahman.

   b. Breed characteristics — Red color, horned, neck folds and sheath present.

   c. Size — Medium sized animals. Mature males weigh 1500-2000 pounds. Females weigh 900-1300 pounds.

   d. Other characteristics — Average breeding performance, average carcass quality, average feeding performance.

INDIAN-AFRICAN BEEF BREEDS

Breed	Origin	Physical Description	Size	Characteristics
Brahman	India	Light gray to dark red. Humped shoulders, loose skin. Drooping ears. Horned.	Medium (1200 - 2000 lbs.)	Poor to average carcass quality. Resistant to heat, insects, disease and parasite. Nervous dispositions.

AMERICAN BEEF BREEDS

Breed	Origin	Physical Description	Size	Characteristics
Polled Herefords	Iowa (1900)	Same as for Herefords except horniless.	Same as for Herefords.	May lack muscling in hind-quarters
Polled Shorthorns	Mid West U.S. (1890)	Same as for Shorthorns except horniess.	Same as for Shorthorns.	Same.
Santa Gertrudis	Texas (1910)	Red with horns. Cross between Shorthorn and Brahman	Medium (1200 - 2000 lbs.)	Average performance. Some resistance to heat, insects.
Beefmaster	Texas (1910)	No standard color. Horned. Cross between Hereford, Shorthorn and Brahman.	Medium to large (1200 - 2200 lbs.)	Good carcass quality and performance.
Barzona	Arizona (1940's)	Red color with horns. Cross of Hereford, Santa Gertrudis, Angus and Africander.	Medium (1000 - 1700 lbs.)	Very productive on poor range. Good quality.
Brangus	Oklahoma (1940's)	Black polled with slick coat and slight hump. Cross between Brahman and Angus.	Medium (1100 - 1900 lbs.)	Good growth rate, carcass quality. Productive on range or pasture.

4. **Beefmaster**

   a. Origin — Lasater Ranch, Texas. Developed around 1910 by crossing Hereford, Shorthorn, and Brahman cattle. Present breed represents ¼ Hereford, ¼ Shorthorn, and ½ Brahman.

   b. Breed characteristics — No color performance. May be red, brown, or spotted. Horned.

   c. Size — Medium to large animals. Bulls weigh 1800 to 2200 pounds. Cows weigh 1200-1500 pounds.

   d. Other characteristics — Good producers under range conditions. Good feed performances. Good carcass quality. This breed has been bred to produce a modern meat-type animal.

5. **Barzona**

   a. Origin — Bard Ranch, Arizona. Developed in 1940's by crossing Hereford, Santa Gertrudis, Angus, and Africander cattle. Developed for use in rugged range conditions of Southwest.

   b. Breed characteristics — Red, horned animals.

   c. Size — Medium sized cattle. Mature bulls weigh 1400-1700 pounds. Cows weigh 900-1200 pounds.

   d. Other characteristics — Large rugged cattle well adapted to harsh range conditions. Very productive on range or grass. High dressing percentage. Good carcass quality.

6. **Brangus**

   a. Origin — Clear Creek Ranch, Oklahoma. Present breed represents ⅝ Angus and ⅜ Brahman ancestors.

   b. Breed characteristics — Medium size black polled cattle with slick hair coats and slight hump over the neck.

   c. Size — Medium size animals. Mature bulls weigh 1500-1900 pounds and cows weigh 900-1300 pounds.

   d. Other characteristics — Good growth rate, productive on range or pasture, good carcass quality, average conformation.

G. **What is the role of the beef breed in the modern beef industry?**

For years the production of high quality purebred cattle has been the backbone of the American beef industry. Many of the beef breeds were introduced into this country in the form of purebred bulls mated to commercial or native cattle. Many of the new exotic breeds have been "Americanized" through the process of breeding purebred cows of one breed by artifical insemination to outstanding bulls of the exotic breed. The offspring of this mating is then bred back to the exotic breed. After five generations of breeding back to the exotic breed, the offspring will represent 1/32 native breed and 31/32 exotic breed.

In the past ten years, many cattle farmers and ranches have turned to a crossbreeding program in which high grade cattle of one breed are mated to purebred bulls of another breed. This type of breeding program produces offspring which tend to possess the strengths of their parents and to lose the weaknesses of the parents breeds. For example, if Hereford cows, which have exceptional carcass quality but are poor milk producers, are crossed with Simmental bulls, which are good milkers but have average carcass qualities, the resulting offspring will have some of the milking ability of the Simmental and the carcass quality of the Hereford.

Some farmers and ranchers have mistakenly believed that a crossbreeding program would destroy the purebred beef cattle industry and the concept of beef breeds. Nothing could be further from the truth. Crossbreeding depends upon the purebred breeding industry for bulls. While crossbred cows have been successfully used to produce outstanding calves, the use of crossbred bulls has been discouraged. Most successful crossbreeders depend upon purebred bulls for use in their breeding program.

H. Lesson Summary

Key points to remember:

1. During the past ten years, the number of beef cattle breeds in the U.S. has expanded as producers seek new breeds for crossbreeding on their cattle.
2. In general, beef cattle breeds fall into four general classes: English breeds, European breeds, Indian-African breeds, and American breeds.
3. In general, the English breeds are small to medium size animals with excellent quality carcasses. Important English breeds include Hereford, Angus, Shorthorn. These breeds dominate the beef industry.
4. In general, the European breeds are large animals with gentle dispositions. They are good milkers and produce big calves. Their carcass quality, however, is average.
5. In general, the Indian-African breeds are medium sized animals with nervous disposition and poor quality carcasses. The chief strength of these breeds is their ability to resist insects, diseases, parasites, heat, and drought.
6. In general, the American breeds are medium size animals. Some of the breeds are merely variations of English breeds while others are the result of a crossing program between two or more breeds. These breeds are the result of a breeding program which produces an animal which is "designed" to meet the needs of a particular area.
7. The role of beef cattle breeds is more important than ever. With the increase in crossbreeding, the need for high quality purebred bulls will continue to remain high.

IV. **Supplementary Activities:**

A. Have a local purebred producer talk to the class concerning the importance of purebred beef cattle production.

B. Develop a set of pictures of the major breeds of beef cattle. Conduct a contest to see how many breeds the students can identify.

C. Have students prepare a report on a selected breed of beef cattle. Information can be obtained from Breed Associations listed in the appendix to this lesson.

VI. **Supplementary Learning Aids:**

A. Transparency Masters

1. TM 9a Classes of Beef Cattle Breeds
2. TM 9b English Beef Breeds
3. TM 9c European Beef Breeds
4. TM 9d Indian-African Beef Breeds
5. TM 9e American Beef Breeds

B. References

Bundy, Clarence E. and Diggins, Ronald V. **Livestock and Poultry Production.** 3rd ed. Englewood Cliffs, N.J.: Prentice Hall. 1968.

Fowler, Stewart L. **Beef Production in the South.** Danville: The Interstate. 1969.

Patton, Bob. **Vocational Agriculture I.** Revised edition. Stillwater, OK: State Department of Vocational Technical Education. 1974.

Vocational Instructional Services. **Basic Vo-Ag I.** College Station, TX: Texas A & M University. n.d.

APPENDIX TO LESSON 9

BREED REGISTRY ADDRESSES

English Breeds

Hereford	American Hereford Association Hereford Drive Kansas City, MO 64105
Angus	American Angus Association 3201 Frederick Boulevard St. Joseph, MO 64501
Shorthorn	American Shorthorn Association 8288 Hascall St. Omaha, NB 68124
Devon	American Devon Cattle Club Goldendale, WA 98620

European Breeds

Charolais	American-International Charolais Association 1606 Old Spanish Trail Houston, TX 77025
Chianina	American Chianina Association P.O. Box 166 Perkinston, MS 39573
Limousin	North American Limousin Foundation 309 Livestock Exchange Building Denver, CO 80216
Maine-Anjou	International Maine-Anjou Association P.O. Box 5636 Kansas City, MO 64102
Simmental	American Simmental Association P.O. Box 24 Bozeman, MT 59715

Indian-African Breeds

Brahman	American Brahman Breeders Association 4815 Gulf Freeway Houston, TX 77025

American Breeds

Polled Herefords	American Polled Hereford Association 4700 E. 63rd Street Kansas City, MO 64130
Polled Shorthorn	American Polled Shorthorn Society Livestock Exchange Building Union Stockyards Omaha, NB 68107

Santa Gertrudis	Santa Gertrudis Breeders Int. Assn. P.O. Box 1257 Kingsville, TX 78363
Beefmaster	Foundation Beefmaster Association Dept. P Suite 200 Livestock Exchange Building Denver, CO 80223
Barzona	Barzona Breeders Association of America P.O. Box 8 Kirkland, AZ 86332
Brangus	International Brangus Breeders Assn. 908 Livestock Exchange Building Kansas City, MO 64102

LESSON 10

Breeds of Dairy Cattle

I. **Introduction:**

Unlike the beef industry, the dairy industry has undergone very little change in the number of breeds in the past century. Today the vast majority of dairy cattle in the United States belong to one of five major breeds. While some dairy farmers have mixed herds of grade and purebred cows of different breeds, top producers usually have purebred cows of only one breed. Most top producers use artificial insemination and may mate their cows to several bulls. Some producers are artifically crossing their dairy cows with beef bulls to produce breeding stock for beef farmers. Usually the top producing cows are bred to top dairy bulls to produce replacement heifers.

The lesson is designed to introduce the student to the dairy breeds in the U.S. and to their characteristics.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to identify the different breeds of dairy cattle and describe their characteristics. The description will include physical characteristics and production characteristics.

B. **Specific objectives.** Upon completion of this lesson, the student should be able to:

1. Define terms associated with dairy breeds.
2. Identify dairy breeds.
3. Describe the major dairy cattle breeds.
4. Describe the minor dairy cattle breeds.
5.
6.

III. **Instructional Procedures:**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire lesson and determine if other material is needed. 2. Prepare transparency. 3. Obtain pictures of major and minor dairy breeds.
B. Introduce the lesson.	1. Discuss material found in Introduction. 2. Identify Lesson Objective. 3. Define new terms listed under Section A of Learning Activities.
C. Describe major breeds of dairy cattle.	1. Discuss material found in Section B of Learning Activities. (Use TM 10a) 2. Show pictures of various breeds.
D. Describe minor breeds of dairy cattle.	1. Discuss material found in Section C of Learning Activities. 2. Show pictures of various breeds.
E. Discuss importance of breeds in the dairy industry.	1. Discuss material found in Section D of Learning Activities.
F. Summarize the lesson.	1. Discuss material found in Lesson Summary.

IV. Learning Activities:

A. New terms and definitions.

1. **Artificial insemination.** The depositing of male semen in the female reproductive system by artificial means.
2. **Butterfat average.** The average percentage of natural fats present in milk. The price of milk is determined by butterfat content.
3. **Lactation period.** A 305 day period consisting of the time a cow begins to give consumable milk after calving until she is "dried-up".
4. **Dry cows.** Cows which are no longer being milked and are waiting to have a calf and begin lactation again.
5. **DHIA.** (Dairy Herd Improvement Association.) A program sponsored by the U.S. Department of Agriculture which helps farmers improve their dairy herd by keeping careful records of each cow's milk production and butterfat content levels.

B. What are the major breeds of dairy cattle? (See TM 10a)

1. **Ayshire**
   a. Origin — Scotland. Exact date of development is not known. Imported to U.S. in 1822.
   b. Physical characteristics — Red with white markings or white with red markings. Horned.
   c. Size — Medium to large animals. Mature bulls weigh 1600-2300 pounds. Cows weigh 1100 - 1300 pounds.
   d. Other characteristics — Rather nervous disposition, bulls can be vicious. Butterfat average around four percent. Milk production levels of around 11,800 pounds per lactation period.
2. **Brown Swiss**
   a. Origin — Switzerland. One of the oldest and purest dairy breeds. Imported to U.S. in 1869.
   b. Physical characteristics — Color varies from light fawn to almost black. Horn tips and tail switch are black. Horned.
   c. Size — Largest of the dairy breed. Mature bulls weigh 1800-2400 pounds. Cows weigh 1200-1400 pounds.
   d. Other characteristics — Quiet, docile temperament. Easily managed. Butterfat average around four percent. Milk production levels around 12,100 pounds per lactation period. Some Brown Swiss bulls are being used in beef crossbreeding programs.

3. **Guernsey**

   a. Origin — The Isle of Guernsey off the coast of France.

   b. Physical characteristics — Light fawn to almost red hair with white markings on face, legs, tail switch, and flanks. Horned.

   c. Size — Small to medium size dairy animals. Mature bulls weigh 1500-1800 pounds. Cows weigh 800-1100 pounds.

   d. Other characteristics — Fair disposition, may become nervous if mishandled. Average butterfat content of 4.7 percent. Milk production levels around 10,650 pounds per lactation. Guernseys produce a milk which has a unique golden color.

4. **Holstein**

   a. Origin — Holland. Imported to U.S. in 1625.

   b. Physical characteristics — Black and white ranging from almost totally black to almost totally white. Horned.

   c. Size — Large. Mature bulls weigh 1700-2000 pounds. Cows weigh 1200-1700 pounds.

   d. Other characteristics — Most numerous breed of dairy cattle. Highest level production of any breed. Average production of 14,500 pounds per period. Some animals have produced over 42,000 pounds of milk in one year. Lowest average butterfat content, 3.6 percent. Mild temperament.

5. **Jersey**

   a. Origin — The Isle of Jersey in the English Channel. First imported into the U.S. in 1850.

   b. Physical characteristics — Color varies from light fawn to almost black. Muzzle (nose) is generally black with black pigment around the eyes. Switch may be black or white. Horned.

   c. Size — Smallest of the dairy breeds. Mature bulls average 1200-1500 pounds; cows average 600-1000 pounds.

   d. Other characteristics — Breed has highest butterfat content average and lowest production level of any breed. Butterfat content averages 4.9 percent. Production levels average 10,100 pounds per lactation period.

C. **What are the minor breeds of dairy cattle?**

Several breeds of cattle are classified as dual-purpose animals. They are a cross between the dairy-type and beef-type animal. In general, they have more muscular bodies and produce milk at lower levels than the true dairy breeds. Examples of these minor dairy breeds include:

1. **Dutch Belted** — Large black cattle with a characteristic white belt around the body. Developed in Holland. Average butterfat content of four percent. Good disposition. Approximately same size as Holsteins. Horned.

TM 10a

MAJOR DAIRY BREEDS

Breed	Origin	Milk Production*	Butterfat Average	Size	Physical Description
Ayshire	Scotland	11,800 lbs.	4%	Medium to Large	Red with white markings on white with red. Horned.
Brown Swiss	Switzerland	12,100 lbs.	4%	Large	Light fawn to almost black. Horned.
Guernsey	Isle of Guernsey	10,650 lbs.	4.7%	Small to Medium	Light fawn to almost red with white spots and marks. Horned.
Holstein	Holland	14,500 lbs.	3.6%	Large	Black and white from almost all black to almost all white. Horned.
Jersey	Isle of Jersey	10,100 lbs.	4.9%	Small	Light fawn to almost black. Black nose and eye pigment. Horned.

*1978-79 average as reported by USDA-DHIA.

2. **Milking Shorthorn** — Very similar to beef type Shorthorns and were developed from same stock. Average butterfat content of four percent. Good disposition. Horned or polled.

3. **Red Polls** — Solid red in color and hornless. Developed in England. Average butterfat content of 3.7 percent.

D. **What is the role of the dairy breed?**

As previously discussed in the Introduction, the breeds of dairy cattle play an important role in the modern dairy industry. The practice of crossbreeding has not gained as wide an acceptance on the dairy farm as it has on the beef farm. The breeding of dairy cattle is not for the purpose of producing slaughter stock, but for replacement of breeding stock and to stimulate milk production. Most producers try to improve their production levels by using superior bulls in an artificial insemination program. The proportion of purebred cows continues to increase. While total numbers of dairy cattle have dropped, production per cow continues to rise.

In recent years, some dairy breeds have been used in beef crossbreeding programs. The Red Poll, Dutch Belted, Milking Shorthorn, and Brown Swiss breeds have been used successfully to improve the milk production of beef herds.

E. **Lesson Summary**

Key points to remember:

1. Most of the dairy cattle in the U.S. belong to one of these breeds: Ayshire, Brown Swiss, Guernsey, Holstein, Jersey.
2. In general, the Brown Swiss is the largest breed of dairy cattle; the Holstein is the highest producing breed; and the Jersey produces the highest butterfat average.
3. Most of the minor breeds of dairy cattle are dual purpose animals possessing many beef cattle traits.
4. Crossbreeding of dairy cattle has not gained wide acceptance in the dairy industry. Many dairy farmers maintain registered or high grade cows of only one breed.

IV. **Supplementary Activities:**

Have a local dairy farmer visit the class and discuss his/her breeding program and the Dairy Herd Improvement Association Program.

VI. **Supplementary Learning Aids:**

A. Transparency masters

TM 10a Major Dairy Breeds

B. References

Bundy, Clarence E. and Diggins, Ronald V. **Livestock and Poultry Production.** 3rd ed. Englewood Cliffs, NJ.: Prentice-Hall. 1962.

Davis, Richard F. **Modern Dairy Cattle Management.** Englewood Cliffs, NJ.: Prentice-Hall. 1962.

Patton, Bob. **Vocational Agriculture I.** Revised by Pete Braker. Stillwater, OK: Oklahoma State Department of Vocational and Technical Education. 1974.

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LESSON 11

Breeds of Hogs

I. **Introduction:**

Like the beef industry, the hog industry has turned to the use of crossbreeding programs in search of a hog carcass which most nearly meets the needs of the pork industry. In the past, hogs were classified as lard type or bacon type. Both types produced carcasses which contained large amounts of fat. With careful breeding in the past twenty years, these older types of hogs have been transformed into a new class, the meat type hog. Considerable variation in carcass quality still exists in every breed. Most of the new lines of hogs represent a trend toward a leaner, longer type of hog.

This lesson is designed to introduce the student to the different breeds of hogs and the characteristics of these breeds.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to identify and describe the major breeds of hogs. This description will include physical characteristics, average mature weight, and other outstanding characteristics.

B. **Specific objectives.** Upon completion of this lesson, the student should be able to:

1. Define terms related to hog breeds.
2. Identify and describe the older breeds of hogs.
3. Identify and describe the newer breeds of hogs.
4. Describe the importance of hog breeds to the hog industry.
5.
6.
7.

III. **Instructional Procedures:**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire unit and determine if additional material is needed. 2. Prepare transparency. 3. Obtain pictures of different hog breeds.
B. Introduce the lesson.	1. Discuss material in Introduction. 2. Identify Lesson Objective. 3. Discuss new terms and definitions found in Section A of Learning Activities.
C. Describe the established breeds of hogs.	1. Discuss material found in Section B of Learning Activities. (Use TM 11a) 2. Show pictures of each breed.
D. Describe the newer inbreed lines of hogs.	1. Discuss material found in Section C of Learning Activities. 2. Show pictures of breeds.
E. Discuss the role of hog breeds.	1. Discuss material found in Section D of Learning Activities. 2. Have a local hog producer discuss his/her preferences and breeding system (optional).
F. Summarize the lesson.	1. Discuss material found in Lesson Summary.

IV. **Learning Activities:**

A. **New terms and definitions**

1. **Meat type hog.** A term used to describe a hog which is trim, long, and heavily muscled. This type hog produces a carcass which is 40 to 45 percent ham, loin, and shoulder cuts.

2. **Inbreed lines.** A breed of hogs which has been developed by breeding crossbred animals back to each other.

B. **What are the older established breeds of hogs? (TM 11a)**

1. **Berkshire**

   a. Origin — Berkshire County England

   b. Physical characteristics — Black with white feet, face and tail tip. Erect ears. Snout is short and turned up.

   c. Mature size — Small to medium sized hogs. Boars: 450-650 pounds. Sows: 400-500 pounds.

   d. Other characteristics — In conformation and fleshing, the Berkshire conforms to the ideal meat-type hog.

2. **Chester White**

   a. Origin — Pennsylvania. Developed from Yorkshire, Lincolnshire, and Cheshire breeds.

   b. Physical characteristics — Solid white, with bluish spots or freckles sometimes present. Slightly drooping ears.

   c. Mature size — Very large hogs. Boars: 550-800 pounds. Sows: 450-600 pounds.

   d. Other characteristics — Sows produce large litters of pigs which grow out rapidly.

3. **Duroc**

   a. Origin — New England States. Developed from Jersey Red, Red Duroc, and Berkshire hogs.

   b. Physical characteristics — Solid red ranging from golden yellow to deep red. Black flecks may appear but spots are objectionable. Drooping ears.

   c. Mature size — Large. Boars: 500-750 pounds. Sows: 450-650 pounds.

   d. Other characteristics — Sows are very good mothers and are very productive.

4. **Hampshire**

   a. Origin — Kentucky. Developed from English stock.

   b. Physical characteristics — Black with a white belt encircling the body including the front legs. Erect ears.

c. Mature size — Small to medium size animals. Boars: 400-600 pounds. Sows: 350-550 pounds.

d. Other characteristics — Sows are very productive and are good mothers. One of the most popular breeds in the U.S. Used extensively in crossbreeding programs. High quality carcass.

5. **Poland China**

a. Origin — Ohio. First lard type hog. Parent stock included breeds from Russia, Ireland, and China.

b. Physical characteristics — Black with blazed white face, white feet and tail tip. Drooping ears.

c. Mature size — Large animals. Boars: 550-800 pounds. Sows: 500-650 pounds.

d. Other characteristics — Breed has adapted to meat type conformation. Exhibits good length of carcass and good hams.

(The Spotted Poland China breed exhibits all characteristics of the Poland China except 20% of the body is white spotted.)

6. **Tamworth**

a. Origin — England. Originally classed as a bacon type hog.

b. Physical characteristics — Solid red varying from light red to dark red. Erect ears.

c. Mature size — Medium size and with long body. Boars: 500-650 pounds. Sows: 400-550 pounds.

d. Other characteristics — Long narrow bodies with a long snout. Sows are very productive, good mothers and good foragers.

7. **Yorkshire**

a. Origin — England.

b. Physical characteristics — White with occasional black pigment spots in skin. Erect ears. Long bodied, large frame.

c. Mature size — Large animals. Boars: 500-750 pounds. Sows: 450-650 pounds.

d. Other characteristics — Body is extremely long. Very firm flesh.

C. **What are the newer breeds of hogs?**

1. **American Landrace**

a. Origin — Denmark. First imported in 1934.

b. Physical characteristics — White with small black spots common. Large drooping ears Long bodied, large framed.

TM 11a

Major Hog Breeds

Breed	Origin	Mature Size	Color	Ears	Other Characteristics
Berkshire	Berkshire Co. England	Boars - 550 lbs. Sows - 450 lbs.	Black with white face, feet and tail.	Erect	Ideal meat-type hog.
Chester White	Pennsylvania	Boars - 725 lbs. Sows - 525 lbs.	Solid white	Slightly drooping	Produces large litters of pigs.
Duroc	New England U.S.	Boars - 625 lbs. Sows - 550 lbs.	Solid red.	Drooping	Very good mothers. Very good producers.
Hampshire	Kentucky	Boars - 500 lbs. Sows - 450 lbs.	Black with white belt.	Erect	High quality carcass.
Poland China	Ohio	Boars - 725 lbs. Sows - 570 lbs.	Black with white face, feet and tail.	Drooping	Good length of carcass.
Tamworth	England	Boars - 575 lbs. Sows - 475 lbs.	Solid red.	Erect	Very productive. Good foragers.
Yorkshire	England	Boars - 675 lbs. Sows - 550 lbs.	White with black pigment in skin.	Erect	Long body. Very firm flesh.

c. Mature size — Large animals. Boars: 500-700 pounds. Sows: 450-600 pounds.

d. Other characteristics — Noted for good feed utilization and meaty carcass.

2. **Ohio Improved Chester (O.I.C.)**

a. Origin — Ohio. Developed from Chester White stock.

b. Physical characteristics — White hair and skin. Slightly drooping ears.

c. Mature size — Very large. Boars: 550-800 pounds. Sows: 500-650 pounds.

d. Other characteristics — Sows are good milkers and mothers.

3. **Inbred Breeds**

A number of inbred lines of hogs have been developed at various state and Federal experiment stations in the past twenty years. While none of these new breeds are being produced in large numbers, they have played an important role in crossbreeding programs for commercial hog production. Table 11-1 lists several breeds which have been developed from the inbreed lines.

D. **Lesson Summary:**

Key points to remember:

1. While the classes of bacon-type and lard-type hogs do not exist today, certain individual animals in all breeds still exhibit some traits of these classes.
2. The modern meat type hog can be described as long, lean, muscular, and trim.
3. The established breeds of hogs include Berkshire, Chester White, Duroc, Hampshire, Poland China, Tamworth, and Yorkshire.
4. Many inbreed lines have been developed in an effort to produce a meatier type hog which gains weight economically.

V. **Supplementary Activities:**

A. Have a local hog producer speak to the class concerning her/his preferences and breeding program.

VI. **Supplementary Learning Activities:**

A. Transparency Masters

TM 11a Major Hog Breeds.

Table 11-1 New Breeds of Swine Developed From Inbred Lines

Breed	Parent Stock	Color
Beltsville No. 1	74% Landrace 26% Poland China	Black and white spots
Beltsville No. 2	58% Yorkshire 30% Duroc 6% Landrace 6% Hampshire	Light red
CPF	Beltsville No. 1 San Pierre	Black and white
CPF No. 2	25% Beltsville No. 1 50% Maryland No. 1 25% Yorkshire	Black and white
Maryland No. 1	38% Berkshire 62% Landrace	Black and white spotted
Minnesota No. 1	38% Berkshire 55% Landrace	Black and white
Minnesota No. 1	45% Tamworth 55% Landrace	Red
Minnesota No. 2	40% Yorkshire 60% Poland China	Black with white spots
Minnesota No. 3	Gloucester Old Spot Welch Pig English Large White Beltsville No. 2 and others	Red
Montana No. 1	45% Hampshire 55% Landrace	Black
Palouse	Chester White Landrace	Black
San Pierre	Berkshire Chester White	Black and white

B. References

Bundy, Clarence E. and Diggins, Ronald V. **Livestock and Poultry Production.** Englewood Cliffs, NJ: Prentice Hall. 1968.

Patton, Bob. **Vocational Agriculture I.** Revised by Pete Braker. Stillwater, OK: Oklahoma State Department of Vocational and Technical Education. 1974.

Vocational Instructional Services. **Basic Vo-Ag I.** College Station, TX: Texas A & M

LESSON 12

Breeds of Chickens

I. **Introduction:**

Unlike the beef producer, the dairy farmer, or the hog farmer, most poultry producers have very little choice as to the breed of chickens they will produce. In many cases, producers are supplied with chickens which are hatched and owned by the contracting poultry company. Most of the chicks and chickens being grown on farms today are crosses between two or more different breeds. Often each poultry company has a line or variety which is peculiar to that one company.

This lesson is designed to introduce the student to the common classes and breeds of chickens and to the breeding practices of the poultry industry.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to identify and describe the common classes and breeds of chickens. The student should also be able to describe the role of the classes, breeds, and varieties in the modern poultry industry.

B. **Specific objectives.** Upon completion of this lesson, the student should be able to:

1. Define new terms related to breeds of chickens.
2. Describe the four major classes of chickens.
3. Identify the common breeds of chickens in each class.
4. Describe the role of the poultry breeds in the modern poultry industry.
5.
6.
7.

III. **Instructional Procedures**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire unit and determine if additional materials are needed. 2. Prepare transparency masters.
B. Introduce the lesson.	1. Discuss material found in Introduction. 2. Identify Lesson Objectives. 3. Discuss new terms and definitions.
C. Discuss characteristics of four major classes of chickens.	1. Discuss material found in Section B of Learning Activities.
D. Discuss characteristics of breeds in each major class.	1. Discuss material found in Section C of Learning Activities.
E. Discuss the role of chicken breeds in the modern poultry industry.	1. Discuss material found in Section D of Learning Activities. 2. Have local producer or field representative of a poultry company speak to the class on the breeds and strains of chickens being grown locally.
F. Summarize the lesson.	1. Discuss material found in Lesson Summary.

IV. Learning Activities

A. New terms and definitions

1. **Class of chickens** — A group of chickens which were developed in the same geographic area.
2. **Breed of chickens** — A group of chickens which are similar in body shape, form, and other physical characteristics.
3. **Variety of chickens** — A subdivision of a breed which is determined by plumage color and the type of comb.
4. **Strain of chickens** — A family line of a breed and variety. The name designates the breeder.
5. **Standard of Perfection** — A listing of all classes and established breeds of poultry which includes a description of each breed and any faults which disqualify an individual animal from being classified in a particular breed. There are 12 classes of chickens and over 200 varieties listed.

B. What are the four major classes of chickens of commercial importance?

Most of the chickens in the United States today were originally developed from four major classes. These classes are:

1. **Mediterranean.** These chickens are the smallest class in weight averaging around six pounds at maturity. All breeds and varieties lay white eggs and are kept primarily for egg production.
2. **English.** These chickens are fairly large averaging around 8.5 pounds. Most of the breeds in this class have white skin. The breeds are commonly used today to cross with other classes for broiler flock production.
3. **Asiatic.** These chickens are also large birds averaging around 9.5 pounds. They are characterized by tufts of feathers on their shanks not found in other classes. The breeds in this class also play an important part in crossbreeding of broiler flocks.
4. **American.** The chickens are large birds averaging around 8.5 pounds. All breeds in this class have yellow skin which is preferred for broiler production. Individual varieties within the breeds are used for broiler or egg production.

C. What are the most common breeds in each class of chickens?

Table 12-1 (TM 12a) lists the most common breeds of chickens in each and describes several characteristics of each breed which are of economic importance.

Table 12-1 Major Classes and Breeds of Chickens

Class and Breed	Weight (lbs.)	Skin Color	Egg Color	Egg Productivity
American				
White Plymouth Rocks	7½ to 9½	Yellow	Brown	Medium
New Hampshire	6½ to 8½	Yellow	Brown	Medium
Jersey White Giant	10 to 13	Yellow	Brown	Medium
Rhode Island Red	6½ to 8½	Yellow	Brown	Medium
Wyandotte	6½ to 8½	Yellow	Brown	Medium
Asiatic				
Langshan	7 to 10	White	Brown	Low
Cochin	8½ to 11	Yellow	Brown	Low
Brahma	9 to 11	Yellow	Brown	Low
English				
Cornish	8 to 10	Yellow	Brown	Medium to Low
Orpington	8 to 10	White	Brown	Medium
Australorp	6½ to 8	White	Brown	Medium
Mediterranean				
Leghorn	4½ to 6	Yellow	White	High
Minorca	6½ to 8	White	White	Medium to High
Ancona	4½ to 6	Yellow	White	Medium to High

Unlike the dairy, beef, and hog breeds, considerable variation in color may occur within a breed of chickens. Varieties of chickens are classed by color. The Plymouth Rock breed, for example, has seven varieties which range from white to blue.

D. **What is the role of chicken breeds in the modern poultry industry?**

Very few purebred chickens are being raised for commercial egg and broiler production in the United States today. In fact, the breeds and varieties of chickens play a minor role in the poultry industry. Purebred flocks are maintained by poultry breeds as a source of foundation stock. Foundation stock of one breed are crossed with foundation stock of another breed. Often the resulting offspring are crossed again. The modern broiler is produced in a manner very similar to the methods by which hybrid seed corn is produced.

Most strains of chickens used for broiler production result from crosses of Cornish, White Plymouth Rocks, and other varieties and strains. Many commercial breeders are very secretive about the exact genetic makeup of their products.

Students desiring to have supervised occupational experience programs in broiler or egg production are advised to talk with local producers to determine which strain available in the local area is best suited to their needs. The use of "purebred" chickens such as White Leghorns or Plymouth Rocks is no longer recommended.

E. **Lesson Summary**

Key points to remember:

1. Most of the chickens in the United States today were developed from four major classes — the Mediterranean, the English, the Asiatic, and the American.
2. Several breeds exist in each of these classes and many different varieties may exist in each breed. Varieties produced by specific producers are called strains.
3. At present, almost all of the commercially grown broilers and layers in the United States are the result of crossbreeding programs. Purebred chickens are no longer used by commercial producers for broiler or egg production.
4. Students desiring to have occupational experience programs in poultry production are advised to consult with local producers to determine the best strain to use and the location of chicks for purchasing.

V. **Supplementary Activities:**

Have a local poultry producer or field representative of a poultry hatchery speak to the class concerning the modern strains of chickens.

VI. **Supplementary Learning Aids:**

A. Transparency Master

TM 12a Classes and Breeds of Chickens

B. References

Bundy, Clarence E. and Diggins, Ronald V. **Livestock and Poultry Production.** 3rd ed. Englewood Cliffs, NJ: Prentice-Hall. 1968.

Vocational Instructional Services. **Basic Vo-Ag I.** College Station, TX: Texas A & M University. n.d.

LESSON 13

Selecting Beef Cattle

I. **Introduction:**

Regardless of the type of beef cattle enterprise, decisions must be constantly made concerning the culling of inferior cattle and the selection of replacement animals. Older animals and poor producers must be replaced with superior younger animals. Since considerable variation in quality of animals exists in every breed, most producers rely upon visual inspection or judging skills in combination with the animal's pedigree and any production records available to select replacement animals. Replacements may be selected from young animals on the farm or purchased from outside sources.

This lesson is designed to introduce the student to the processes used in selecting beef animals for herd replacements.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this lesson, the student should be able to distinguish higher quality beef animals from lower quality animals.

B. **Specific objectives.** Upon completion of this lesson, the student should be able to:

1. Define terms associated with beef cattle selection.
2. Identify the external parts of a beef animal.
3. Distinguish the higher priced wholesale meat cuts from the lower priced cuts on a beef carcass.
4. Describe the ideal beef type conformation.
5. Identify defects in beef conformation.
6. Describe other factors to be used in selecting beef animals.
7. Distinguish higher quality animals from lower quality animals.
8.
9.
10.

III. **Instructional Procedures:**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire lesson and determine if additional material is needed. 2. Prepare transparencies.
B. Introduce the lesson.	1. Discuss the importance of being able to select high quality beef animals. 2. Identify lesson objectives. 3. Discuss new terms and definitions.
C. Identify the parts of a beef animal.	1. Use TM 13a to show major parts of beef animal. 2. Discuss the importance of learning proper names of the parts.
D. Identify the wholesale cuts of a beef carcass.	1. Discuss importance of learning the wholesale cuts of carcass. 2. Identify most valuable and least valuable parts. TM 13b. 3. Briefly mention retail cuts to emphasize value of wholesale cuts.
E. Identify ideal beef conformation.	1. Discuss the 16 characteristics found in Section D of Learning Activities. Use TM 13c. 2. Discuss the three steers found in TM 13d, 13e, and 13f.

Teaching Tasks	Steps to Accomplish Tasks
F. Identify common defects in conformation.	1. Discuss common skeletal defects as listed in Section E of Learning Activities. Use TM 13g, 13h, and 13i. 2. Discuss common signs of reproductive efficiency in cows, heifers, and bulls. Use TM 13j.
G. Discuss other factors to be used in selection of beef animals.	1. Discuss the use of pedigree, merit testing, and progeny testing as a means of selection. Discuss how these programs can provide added information for beef cattle selection.
H. Select beef cattle.	1. Have students distinguish higher quality animals from lower quality animals. If live animals cannot be used, use pictures or slides of animals in the local area.
I. Summarize the lesson.	1. Discuss material under Lesson Summary.

IV. **Learning Activities:**

A. **New terms and definitions:**

1. **Judging** — A visual appraisal of an animal's potential for production.
2. **Pedigree** — A list of the ancestors of an animal.
3. **Production record**— A record of an animal's performance.
4. **Progeny test** — A record of the performance of an animal's offspring.
5. **Finish** — A term which refers to the distribution of fat over an animal's body.
6. **Marbling** — The distribution of fat inside the muscles of an animal.
7. **Balance** — The overall blending of parts in proper proportions.
8. **Muscling** — The proportion of muscle to fat and bone present on an animal.
9. **Soundness** — The quality of being correctly set on the feet and legs.
10. **Trimness** — Freedom from excess finish or fat.
11. **Ruggedness** — Quality of having large bones and frame.

B. **What are the parts of a beef animal? (TM 13a)**

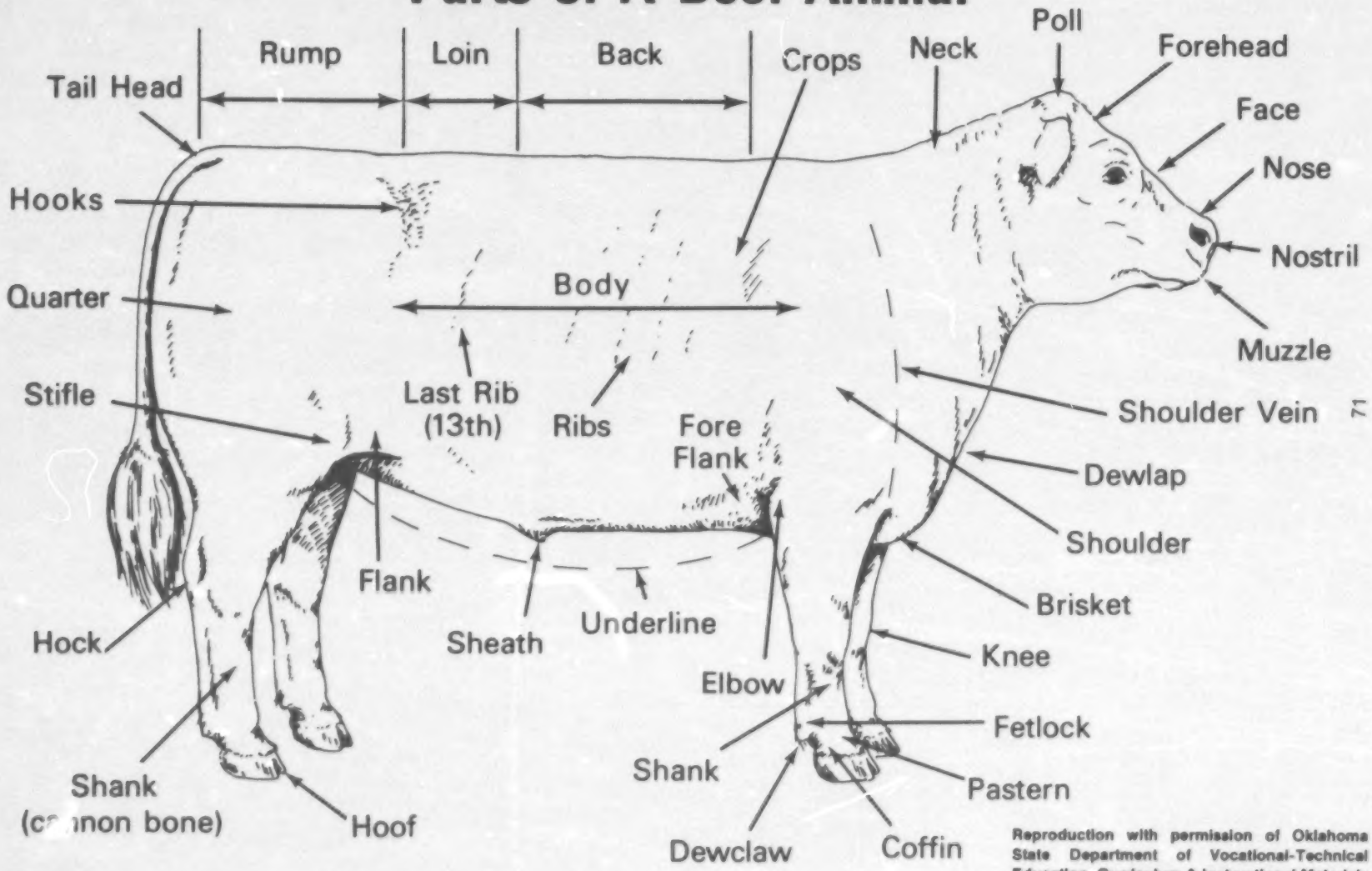
Prior to selection of beef animals, one should be familiar with the external parts of the animal. TM 13a shows the commonly used names of these parts.

C. **What are the wholesale cuts of a beef carcass? (TM 13b)**

Since the ultimate purpose of any beef animal is to produce meat for consumption, the student should be familiar with the wholesale cuts of meat which are found on a beef carcass. The most valuable wholesale cuts are the rib, loin, and round. Animals having desirable conformation produce a carcass which has a high percentage of these cuts. The brisket, foreshank, plate, flank, and shank are the lowest priced cuts on the carcass. These cuts are the areas of greatest waste and should make up as small a percentage of the carcass as possible.

TM 13a

Parts of A Beef Animal



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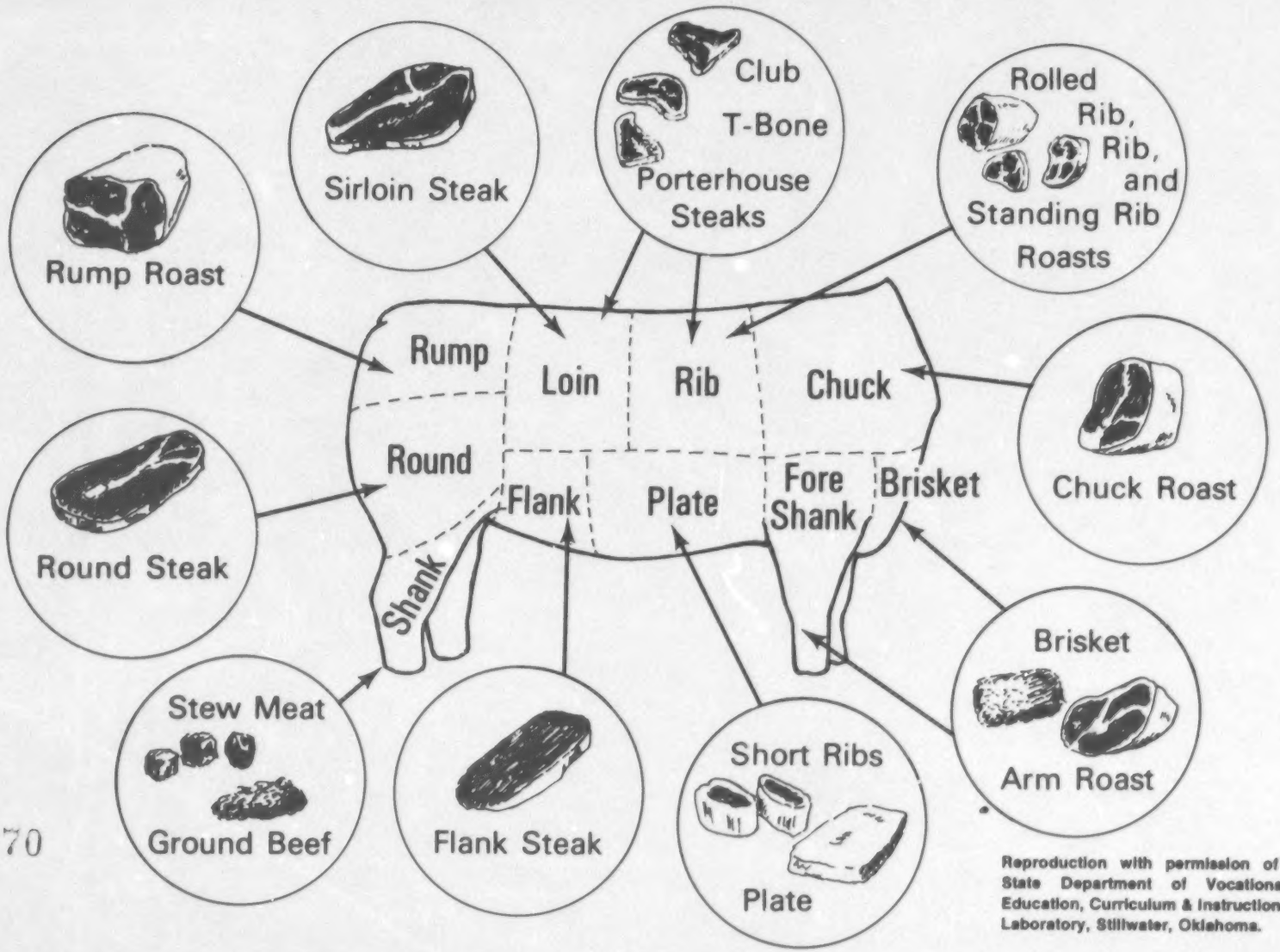
TM 13b

Wholesale Cuts of Beef



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D. **What is the ideal beef type conformation? (TM 13c, d, e, f)**

In selecting animals for herd replacements, the producer must look for conformation to the modern beef-type. Considerable variation exists in individual animals in all breeds. In the past 10-15 years the ideal type of beef animal has changed dramatically. The ideal type was once described as low set, deep, broad and meaty. Today the modern ideal type of animal can be described as having:

1. A head with a broad muzzle, eyes large and clear, fine-textured, medium-size ears.
2. A neck with good balance blending smoothly into shoulders.
3. A body showing muscling but smooth over the top.
4. A neat trim brisket with width and fullness in the breast.
5. Good substance of bone with legs placed at corners of body.
6. Average depth through the chest, neat in the crops.
7. A straight muscular top-line.
8. A thick deep loin showing good muscling.
9. Well sprung ribs with a moderate amount of covering.
10. Strong underline, "tucked up" in the flanks.
11. Neatly laid-in hook bones.
12. A long, thick and muscular rump, free from excess finish.
13. Depth and fullness through the thighs.
14. Hindquarters which are clean with good depth in the twist.
15. A firm, uniform covering of flesh.
16. Purebred animals should conform to all standards of their breed.

TM 13d shows a side view of three steers representing three different types of animals. For purposes of comparison, the steers are shown as both live animals and as cross sectioned carcasses. While these illustrations are drawings, they represent actual steers and their resulting carcasses.

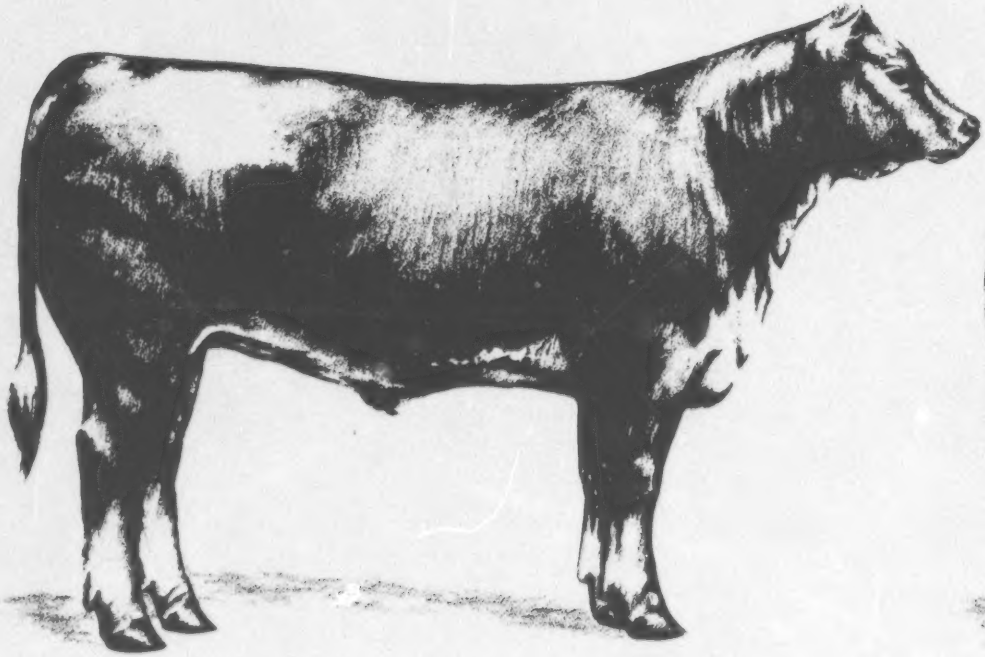
Steer No. 1 can be described as being light framed, very upstanding, and shallow bodied. The animal lacks muscling in the hindquarters and elsewhere, and also lacks balance and symmetry. The animal lacks the quality of a well-finished animal and can best be described as underfinished. While the carcass shows a high percentage of the high priced primal cuts, it also displays a lack of finish and an overall lack of quality.

Steer No. 2 conforms very closely to the ideal type of beef animal. The animal displays a body of ample length and a long full rump and loin with a deep bulging hindquarter. He has strong muscle development in the arm, and forearm region and is trim in the flanks, middle and brisket. The steer exhibits correct skeletal structure, standing on ample legs which are correctly placed under the body. The carcass of this animal further demonstrates the long trim body of an animal carrying the proper amount of finish. This steer would yield a high perentage of the high-priced meat cuts.

TM 13c

IDEAL BEEF CONFORMATION

REAR VIEW



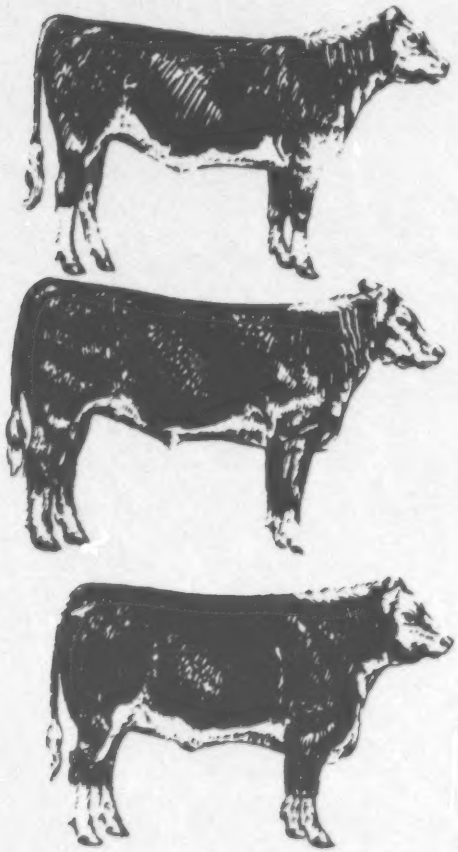
SIDE VIEW

FRONT VIEW

77

TM 13d

COMPARISON OF LIVE STEERS
(SIDE VIEW)

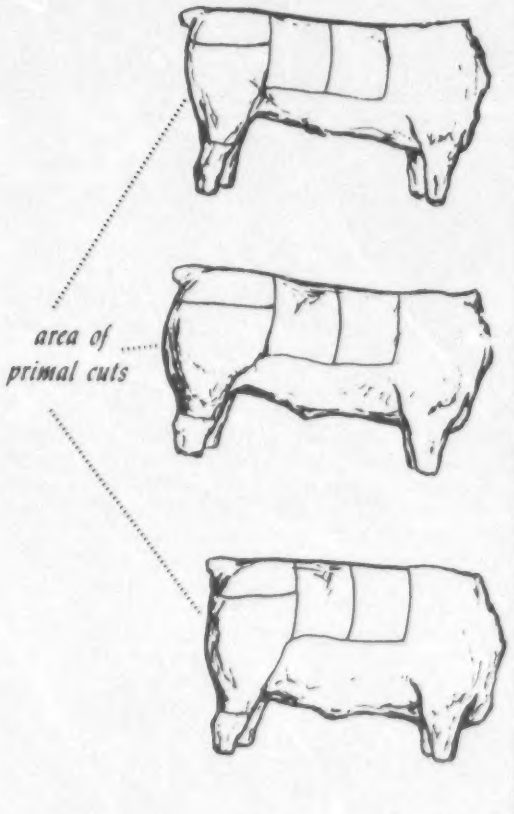


STEER 1

STEER 2

STEER 3

COMPARISON OF STEER CARCASSES
(SIDE VIEW)



STEER 1

STEER 2

STEER 3

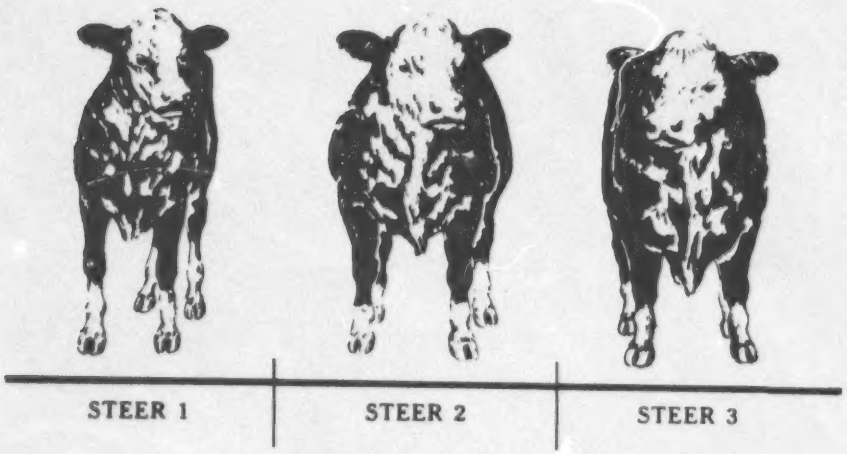
79

76

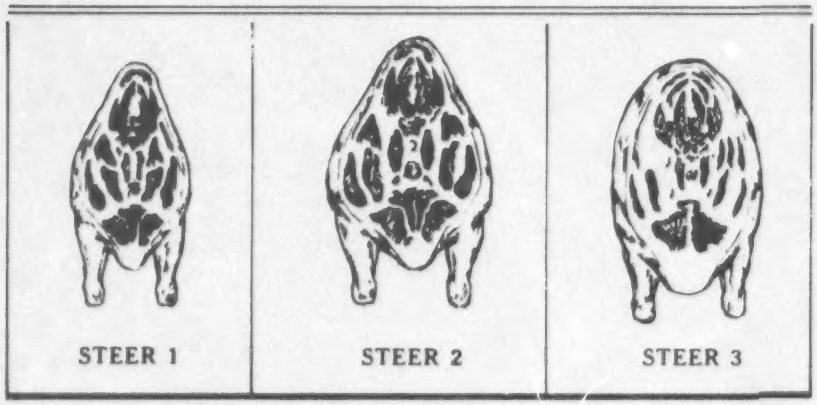
Comparison of Steers (Sideview)

75

COMPARISON OF LIVE STEERS
(FRONT VIEW)

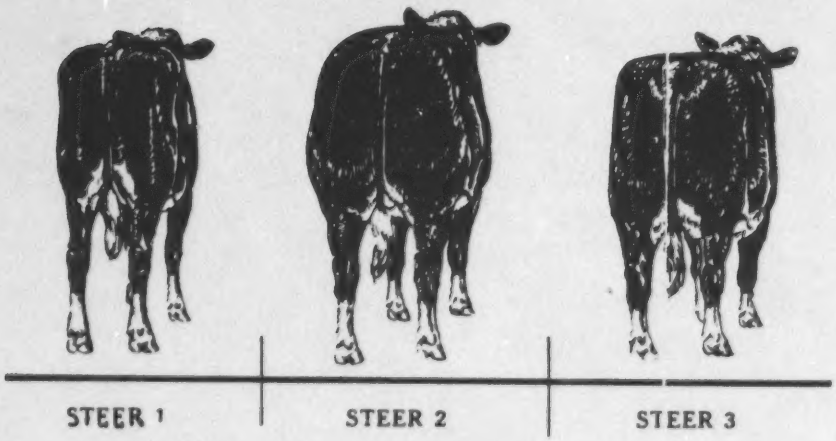


CROSS SECTION OF STEER CARCASSES
(FRONT VIEW)

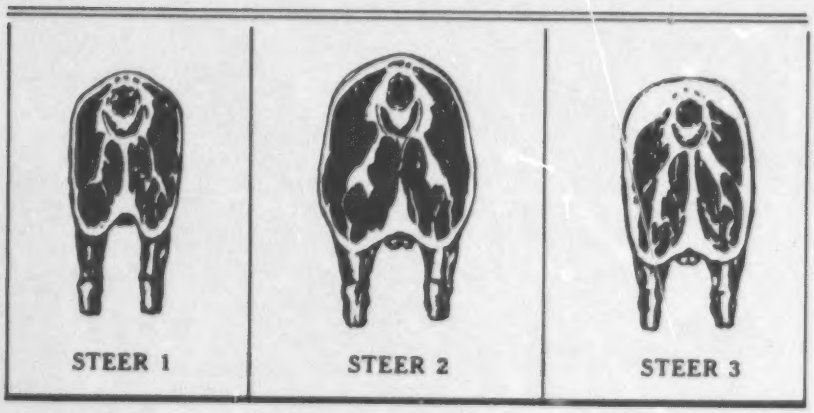


Comparison of Steers (Front View)

COMPARISON OF LIVE STEERS
(REAR VIEW)



CROSS SECTION OF STEER CARCASSES
(REAR VIEW)



Steer No. 3 can be described as a short-bodied animal who is unbalanced, overfinished and wasty. This animal is short-legged and is very wasty in the brisket, rear flank, and cod. The animal is light in the hindquarters and heavy in the frontquarters. This steer would, therefore, yield a lower percentage of primal cuts as can be seen on the carcass.

TM 13e presents a frontview of the same three steers and a cross section of these carcasses. Steer No. 1 continues to display a lightness of muscle and frame and a general lack of muscling and fleshing. The cross-section displays very little marbling which indicates low yield and low tenderness.

Steer No. 2 displays wide well-muscled shoulders and a clean trim brisket. The legs of this animal are correctly set.

Steer No. 3 is an extremely wasty animal which is carrying too much fat. The large amounts of fat in the brisket are typical for steers of this type. This steer can be critized for its short legs and lack of muscling.

TM 13f provides a rear view of the three steers and their carcasses. These views further support the comments which have been previously made.

Steer No. 1 continues to show a general lack of finish, muscling, and marbling. The number 2 steer again approaches the ideal conformation. Note the high percentage of red meat in the carcass cross-section and the trim finish. Steer No. 3 continues to typify the large wasty animal which has been overfinished. Note the difference in roundness of the rump between the three steers.

E. What are some common defects found in beef cattle conformation? (TM 13g, h, I, j.)

There are numerous defects in conformation of individual beef animals. Some defects occur at birth while others may develop during the life of an animal. Since many of the defects may be passed on to the animal's offspring, it is essential that the producer be able to recognize defects in breeding stock.

One common group of defects found in beef animals concerns the skeletal system of the animal. A strong skeletal system is needed by breeding animals in order to enable them to move freely in search of forage. Straight, large-boned animals are vital to profitable calf production.

TM 13g shows some common skeletal defects which can be readily observed. From the front view the first steer shows the correct placement of the legs. This animal demonstrates width and capacity in the chest area and its legs are spaced wide apart and properly set. The No. 2 animal has feet and legs which are turned out, a condition referred to as being "splayed." The No. 3 animal is pigeon-toed or its knees and feet are turned in.

TM 13g also shows some common front leg defects from a sideview. The No. 4 animal exhibits correct skeletal structure. No. 5 is calf kneed with the legs bent in a backward direction. Buck-kneed animals (No. 6) are just the opposite with the legs bending forward.

TM 13g

COMPARISON OF CORRECT WITH DEFECTIVE FRONT LEGS

CORRECT | SPLAY FOOTED | TOED IN | CORRECT | CALF KNEED | BUCK KNEED

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Common defects in the rear legs are shown in TM 13h. Animals 1 and 4 exhibit proper skeletal structure. They have maximum width through the lower round and style. Their hind legs come straight down from the body with proper set. Animal No. 2, on the other hand, displays noticeable weakness by being bow-legged or out in the hocks. The No. 3 animal is the opposite of No. 2 with its legs turning to the inside.

From the inside view, animal No. 5 is post-legged with its rear legs being set too far back. The No. 6 animal is sickle-hocked with its legs being set too far to the front. Further illustration of these two terms is shown in TM 13i. As can be seen on the No. 2 animal, a line drawn straight down from the pin bone should almost touch the hock and rear shank. On the sickle-hocked animal (No. 3), this line falls far behind the lower leg. The line on the No. 4 animals runs through the leg indicating a post-legged condition.

In selecting cows, heifers, and bulls for breeding, it is highly important to look for signs of reproductive efficiency and fertility. Usually these signs can be found by studying the animal's heat, neck, and shoulders.

TM 13j shows two cows; one showing signs of being highly fertile, the other showing signs of having low fertility. The top cow has a long, clean, smooth-muscled neck. She displays strong evidence of femininity. The bottom animal, however, exhibits many undesirable characteristics including excessive fat around the neck, brisket, and underline. The bottom cow's head is much less refined, the neck is thicker, and the udder is smaller than the top cow's. Udder development in beef cattle is almost as important as in dairy cattle, since good milking ability means a heavier calf at weaning time.

In judging bulls, masculinity is the important trait to look for. A massive well-developed head and strong neck with an noticeable crest on the shoulder are good indicators of masculinity.

All breeding animals must conform as closely as possible to the ideal type which was previously discussed.

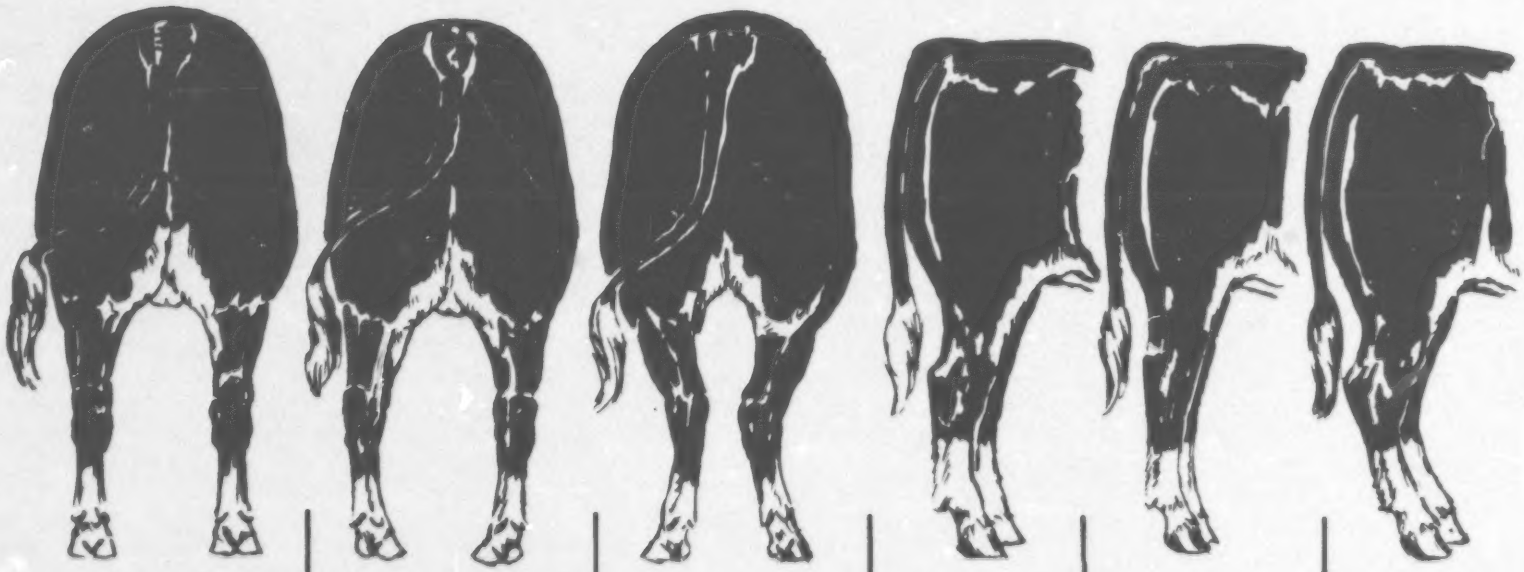
F. **What other factors can be used to select beef animals?**

In recent years, there has been an increased trend toward the use of performance records in selecting herd replacements and in deciding which animals to cull from the herd. Various types of records used include:

1. **Pedigree records.** The performance of the animal's immediate ancestors can provide information which can be used to estimate the animal's future performance. Data on the ancestor's birth weight, weaning weight, growth rate, and body type should be considered. The producer should not use the animal's bloodline solely as a means of selection, as individuals in the same bloodline can vary considerably.
2. **Individual Merit Testing.** This system of selection is based upon the animal's prior performance. This performance is measured by recording data on the animal's reproductive efficiency, nursing ability of cows, rate of gain, economy of gain, longevity and carcass merit. This method is used largely to determine which animals should be kept for replacement and which animals should be culled from the herd.

TM 13h

COMPARISON OF CORRECT WITH DEFECTIVE HIND LEGS



CORRECT | OUT IN THE HOCKS | COW HOCKED | CORRECT | POST LEGGED | SICKLE HOCKED

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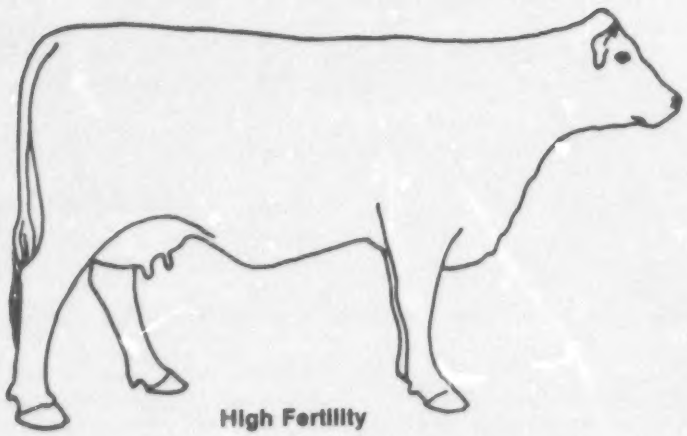
SUBSTANCE OF BONE AND SET OF LEGS AND FEET

Fig. 1

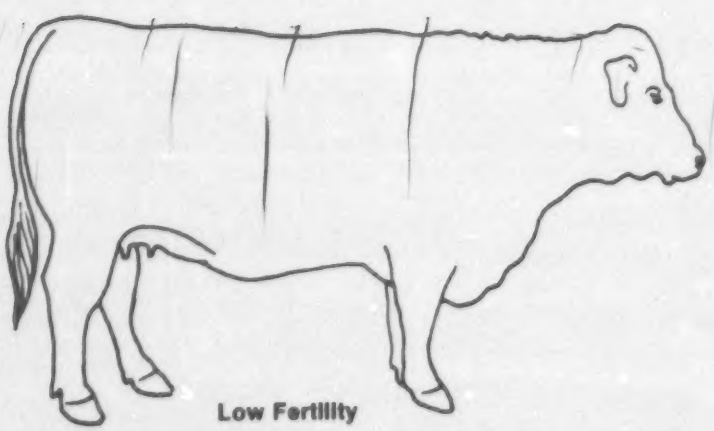
Fig. 2

Fig. 3

Fig. 4



High Fertility



Low Fertility

Comparison of High Fertility and Low Fertility Cows.

3. **Progeny testing.** This method of selection involves the testing of the animal's offspring as a method of evaluating the animal. It is used most extensively with bulls, especially those used in artificial insemination programs.

   Usually the bull is bred to 25 to 30 cows. Data on the offspring of these cows are then recorded.

G. **Lesson Summary**

Key points to remember:

1. Most modern beef producers rely upon a combination of visual appraisal and performance records in making decisions concerning selection of individual animals.
2. In selecting beef animals, the student should remember that the loin, rib, and round are the most valuable cuts on the beef carcass.
3. In judging beef animals, the student must form a mental image of the ideal animal and then compare this ideal type to the animals being judged.
4. Common defects found in many beef cattle exist in the skeletal system and are evidenced by improperly set legs and feet.
5. In addition to judging, many producers also rely upon pedigree, merit testing, and progeny testing as a means of selection.

V. **Supplementary Activities:**

A. Have a local purebred breeder speaker to the class on selection methods and systems.

B. Conduct a simplified judging contest. Allow the students to select the high animal and low animal from a group of four animals. Live animals may be obtained from a local farmer and judged on the farm or transported to the school. Require the students to submit reasons to support their selection. If live animals cannot be obtained, use slides of local animals. (Note to teachers: The purpose of this lesson is not to train a judging team for FFA Contests, but to provide all students with an elementary knowledge of the beef type and conformation.)

C.

D.

E.

VI. **Supplementary Learning Aids:**

A. Transparency Masters

1. TM 13a Parts of a Beef Animal
2. TM 13b Wholesale Cuts of Beef
3. TM 13c Ideal Beef Conformation
4. TM 13d Comparison of Steers —Sideview
5. TM 13e Comparison of Steers — Frontview
6. TM 13g Comparison of Correct with Defective Front Legs
7. TM 13g Comparison of Correct with Defective Front Legs
8. TM 13h Comparison of Correct with Defective Hind Legs
9. TM 13i Substance of Bone and Set of Legs and Feet
10. TM 12j Comparison of High Fertility and Low Fertility Cows

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LESSON 14

Selecting Dairy Cattle

I. **Introduction:**

As is true of the beef breeds, considerable variation exists in the quality of individuals in all of the dairy breeds. Because of this reason, the dairy producer must carefully select the animals to be culled from the herd and the replacement heifers, cows and bulls to be used in their place. Most dairy producers now use a combination of visual appearance and production records in making these selections.

This lesson is designed to introduce the student to the procedures to be followed in selecting dairy cattle.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this unit, the student should be able to distinguish higher quality dairy cows from lower quality dairy cows.

B. **Specific objective.** Upon completion of this unit, the student should be able to:

1. Define terms associated with dairy cattle selection.
2. Identify the external parts of a dairy animal.
3. Describe the ideal dairy conformation.
4. Identify defects in dairy conformation.
5. Describe other factors to be used in selecting dairy animals.
6. Distinguish higher quality dairy animals from lower quality animals
7.
8.
9.

III. **Instructional Procedures**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire lesson and determine if additional material is needed. 2. Prepare transparencies.
B. Introduce the lesson.	1. Discuss materials found in Introduction. 2. Identify Lesson Objectives. 3. Discuss new terms and definitions.
C. Identify the parts of a dairy cow.	1. Identify parts of a dairy cow as seen in TM 14a. 2. Emphasize most important parts including: heart girth, barrel, chest floor, mammary veins, fore udder, fore udder attachment, udder, teats, rear udder, rear udder attachment, and rump.
D. Discuss characteristics of the ideal dairy cow.	1. Discuss distinguishing features of a dairy cow. a. Angularity b. Development of mammary system TM 14b TM 14c 2. Discuss use of Dairy Cow Unified Score Card. TM 14d. 3. Discuss characteristics to look for in judging heifers. 4. Discuss characteristics to look for in judging bulls.

Teaching Tasks	Steps to Accomplish Tasks
E. Discuss defects in dairy conformation.	1. Discuss defects in general appearance. 2. Discuss defects in dairy character. 3. Discuss defects in body capacity. 4. Discuss defects in mammary system.
F. Discuss other factors to be considered in selecting dairy cattle.	1. Discuss different types of production records including: a. Milk production records b. Butterfat records c. Feed conversion records
G. Conduct a simplified dairy cattle judging contest.	1. Conduct a simplified judging contest in which students pick a high individual and a low individual from a group of four cows. If possible arrange to use live cows. As an alternate, slides of pictures of animals may be used.
H. Summarize the lesson.	1. Discuss key points in Lesson Summary.

IV. **Learning Activities:**

A. **New terms and definitions:**

1. **Dairy Herd Improvement Association (DHIA)** — A group of dairy farmers who test their animals on a periodic basis to determine each individual animal's milk production, butterfat production, and feed conversion levels.
2. **Dry cow** — A cow that is not currently producing milk.
3. **Lactation period** — The period of time from the beginning of milk production to the time the cow is turned dry. (Usually 305 days)

B. **What are the parts of a dairy cow?**

In order to use proper terminology when evaluating dairy cattle the student should learn the common names of the parts of a dairy cow. TM 14a shows the most commonly used names for the external parts of the dairy cow.

C. **What are the characteristics of the ideal dairy cow?**

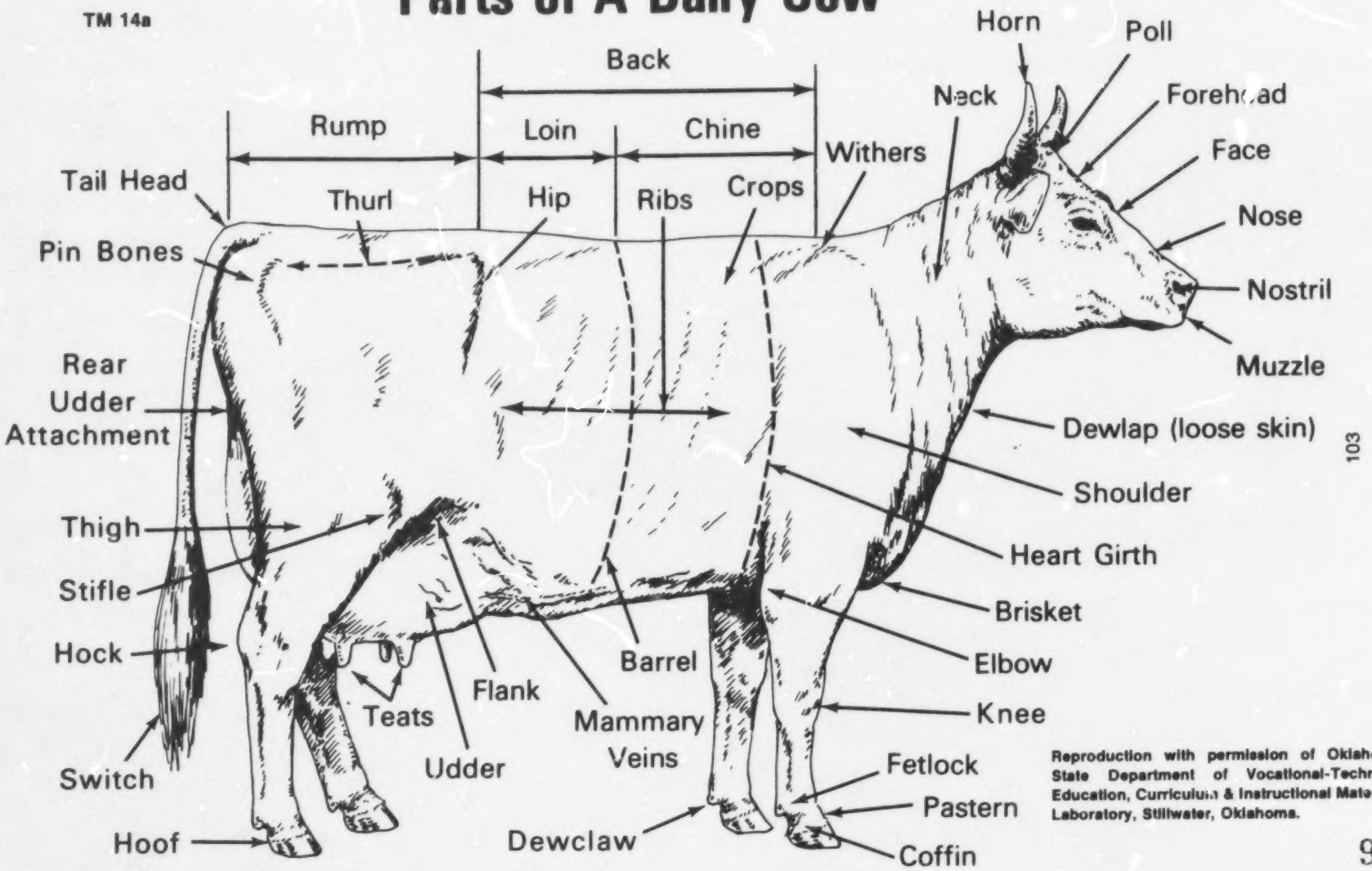
In judging dairy cattle, the student should develop a mental picture of the ideal dairy cow. Although the present-day breeds of beef and dairy cattle originated from common ancestors, years of selection have caused the dairy cows to develop a body type which is quite different from the beef cow. Distinguishing features of the dairy type include:

1. **Angularity of form.** Unlike the beef type in which roundness of the rump and body is emphasized, a high-producing dairy cow will possess very angular lines. After calving, a high-producing cow will lose weight to the point that the skeleton will become visible under the skin at withers, shoulders, backbone, hips and pinbones. These bones will project from the body and appear to be much sharper than in beef cattle. The flesh parts of the body such as the thighs and loin will also become thinner after calving.
2. **Development of the mammary system.** Undoubtedly, the most important part of the dairy cow is the udder. In general, the larger the udder the more milk a cow will produce. Unfortunately, cows with larger udders often experience difficulty in keeping the udder attached. TM 14b shows an ideal udder and the attachments which support it. The fore udder attachment is nearly parallel to the body underline and extends far forward. The rear attachment is high on the body and wide. The teats hang straight down. If the central suspensory membrane which divides the udder begins to break loose, the teats will tend to point outward. If the rear udder begins to break loose, the teats will tend to point forward.

   In TM 14c, an ideal udder (A) is compared to three udders which are breaking away from the animal's body. Udder B is breaking away in both the fore udder and rear udder attachments. Udder C is breaking away in the rear attachments, causing the teats to point forward. Udder D has completely broken

Parts of A Dairy Cow

TM 14a



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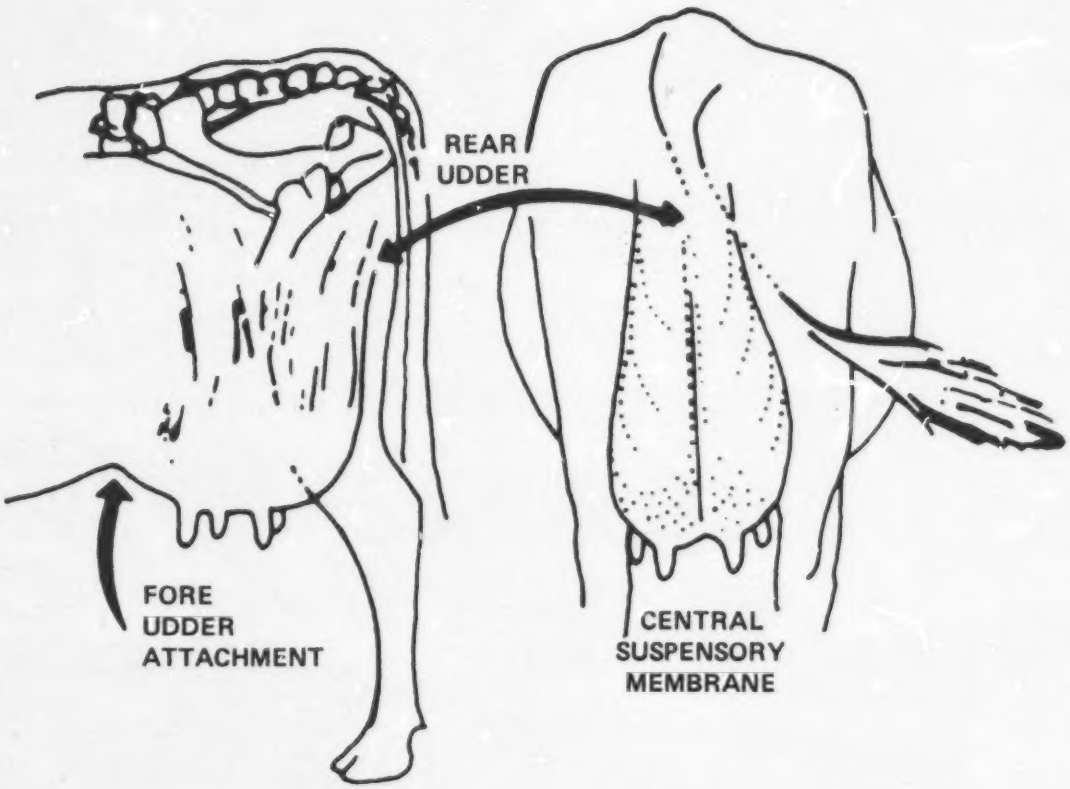
TM 14b



IDEAL UDDER CONFORMATION

A. B. C. D.

DEFECTS IN UDDER CONFORMATION

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TM 14c

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away from the body and is described as being pendulous. In many cases pendulous udders will swing back and forth, striking the rear legs. This can cause the milk secreting tissue to be replaced by scar tissue and a resulting decrease in milk production. Usually a poorly attached udder becomes progressively worse as the cow becomes older.

3. **Development of body capacity.** Another outstanding characteristic of a high producing dairy cow is a large middle section or barrel. A large barrel indicates a strong ability to convert large amounts of forages into milk. The barrel extends from the backbone to the underline and from the shoulders and chest to the hipbone and flank. Body capacity depends upon the depth of the barrel and the spring of the ribs. In a cow having good body capacity, the barrel is usually of extraordinary size in comparison with the rest of the body.

   The dairy breed associations have adapted a unified score card for evaluating a dairy animal's physical appearance. The score card is composed of our major areas as shown in TM 14d. Each of the major areas is assigned a given number of points which totals to 100 points.

In addition to the comments found on the score card, the following comments may be made concerning individual characteristics.

1. **General Appearance.**
   a. Breed characteristics — The animal should clearly conform to the standards set by the breed association.
   b. Color — The animal must possess the proper color markings appropriate to the breed.
   c. Size — The animal should conform to the size related to the breed specifications.
   d. Head — The head should be well-developed, broad, and strong with a docile but alert disposition as indicated by bright clear eyes.
   e. Shoulder blades — The shoulder blades should blend closely to the body and should be free from coarseness.
   f. Back — The back of the animal should be straight and level with a broad level loin.
   g. Rump — The rump should be broad and level with a smooth level topline.
   h. Legs and feet — The animal's legs should be straight and strong being placed squarely under the body and wide apart. The feet should be firm and compact.
2. **Dairy Character.**
   a. Neck — The neck should be long and slender with freedom from folds of skin at the throat and brisket.
   b. Angularity — The withers should be free from coarseness and well-defined. Ribs should be plainly shown, set wide apart, flat and long. The flank should extend downward covering the upper portion of the udder. The thighs should incurve on the outward side and be set wide apart when viewed from the rear. The animal's skin should be pliable and loose having fine, soft, lustrous hair.

DAIRY COW UNIFIED SCORE CARD

BREED CHARACTERISTICS SHOULD BE CONSIDERED IN THE APPLICATION OF THIS SCORE CARD

		Perfect Score	
Order of Observation			
1.	**GENERAL APPEARANCE**		**30**
	(Attractive individuality with femininity, vigor, stretch, scale, harmonious blending of all parts and impressive style and carriage. All parts of a cow should be considered in evaluating a cow's general appearance)		
	Breed Characteristics	10	
	Color		
	Size		
	Head		
	Shoulder blades	10	
	Back		
	Rump		
	Legs and feet	10	
2.	**DAIRY CHARACTER**		**20**
	(Evidence of miling ability, angularity, and general openness, without weakness, freedom from coarseness, giving due regard to period of lactation)		
	Neck	20	
3.	**BODY CAPACITY**		**20**
	(Relatively large in proportion to size of animal, providing ample capacity, strength, and vigor)		
	Barrel	10	
	Hearth girth	10	
4.	**MAMMARY SYSTEM**		**30**
	(A strongly attached, well balanced, capacious udder of fine texture indicating heavy production and a long period of usefulness)		
	Udder	10	
	Fore udder	6	
	Rear udder	7	
	Teats	5	
	Mammary veins	2	
		TOTAL	**100**

3. **Body Capacity**

   a. Barrel — As previously mentioned the barrel should be large in proportion to the rest of the body, having great width and depth. The ribs should be well-sprung and have a barrel-like appearance.

   b. Heart girth — The heart girth should be large with a deep full chest and long arched foreribs. The chest should be wide enough so that a person's hand can be placed on the floor of the chest directly between the front legs.

4. **Mammary system**

   a. Udder — The udder should have great width and depth, but should be no deeper than its length.

   b. Fore udder — The fore udder, as previously mentioned, should extend almost parallel to the underline of the body. No gap should exist between the fore udder and body wall.

   c. Rear udder — The rear udder and its attachments should be wide and extending up the rear of the animal.

   d. Teats — There should be four teats of approximate size and symmetry. All teats should hang straight down and should be an equal distance from the floor.

   e. Mammary veins — The veins on the surface of the udder should be large and prominent with many branches. Veins should extend forward from the udder.

All of the material which has been discussed this far relates to selection of mature dairy cows which are currently producing milk. In judging mature dry cows which are currently not producing, many of the previously discussed characteristics can still be used. One should remember, however, that dry cows have a tendency to gain weight and loose some of their angularity.

When selecting heifers, one should pay close attention to the general appearance and style, the body capacity, and the dairy form of the young animal. Heifers should have a healthy growthy appearance with a smooth, even hair coat and a loose pliable skin. Excessive amounts of finish or fat are undesirable. The animal should exhibit the angularity and trimness of a dairy animal. A strong straight back and set of legs are important points to look for. The udder should show loose folds of skin indicating a possibility for expansion and the teats should be uniform in size and symmetry. The barrel will not be as large proportionally as in the cow, but the ribs should be well arched with a rounded barrel and a deep flank.

The producer who still uses live bulls in the breeding program should select animals having as many characteristics of heifers and cows as possible. Additionally the bull should display masculine features as a thick muscular neck and fairly well-developed shoulders. A mature bull should weigh 50 percent more than a mature cow of the same breed. Strong straight legs and feet are especially desirable.

C. **What are some common defects in dairy conformation?**

The following list includes many common defects found in individual cows of all breeds:

1. **Defects in general appearance.**
   a. Breed, color, and eye defects — Mixed colors or lack of sharply defined color markings. Size much too small for age or breed.
   b. Head defects — Dull eyes, droopy carriage, coarseness as indicated by extra large size or lack of dish in forehead.
   c. Shoulder blade defects — Projecting shoulder blades.
   d. Back defects — Sway-backed appearance.
   e. Loin defects — Narrow sloping loin having depressions or irregularities.
   f. Rump defects — Rump sloping toward the rear, coarse heavy tail setting, or rump sloping forward or to the side.
   g. Legs and feet defects — Crooked legs as viewed from side or rear. Sickled hocked animals. Cow-hocked animals. Legs close together.
2. **Defects in dairy character.**
   a. Neck defects — Thick fleshy neck with heavy folds of flesh at the throat.
   b. Other defects — Ribs covered with heavy layers of flesh, short and closely spaced. Thick heavy thighs set closely together. Rough dry hair with lack of luster.
3. **Defects in body capacity.**
   a. Barrel defects — Lack of length and depth.
   b. Heart girth — Narrow chest, front legs close together.
4. **Defects in mammary system.**
   a. Udder defects — Small size not extending far back or far forward. Quarters broken away from the body.
   b. Fore udder defects — Attachment lying at a pronounced angle from the body. Front quarter hanging down.
   c. Rear udder defects. Attachment low and narrow. Rear attachment breaking away from the body.
   d. Teats defects — Abnormally large or small teats. Teats very close together. Lumps or warts on teats.
   e. Mammary veins defects — Short small veins with few branches.

D. **What other factors can be used in selecting dairy cattle?**

As in the case of beef animals, dairy animals may also be selected on the basis of pedigree, performance, or progeny. Many producers are using artificial insemination and pick the bulls for use in their herd solely on the basis of progeny tests. Additionally many dairy farmers are members of a Dairy Herd Improvement Association and utilize production testing to determine which cows to cull and the cows whose heifers will be kept as possible herd replacements.

Dairy Herd Improvement Associations are groups of local producers who employ an independent tester to check their herds on a monthly basis. The tester tests each cow during each month of the milking period to determine the amount of feed the cow consumes, the amount of milk produced, and the butterfat content of the milk. The farmer reviews a monthly report on each individual cow in the herd and on the herd as a whole. Conversion tables are provided to allow for lower levels of production for younger cows. Based upon these records the dairy farmer can determine the high producing cows in the herd and select the animals to be culled.

E. **Lesson Summary**

Key points to remember:

1. Selection of dairy cattle should be based upon visual appearance and available production records.
2. The ideal dairy cow should be angular in form, have a large well-attached udder, and should have a large barrel indicating good body capacity.
3. Defective conformation in dairy cattle is indicated by poor skeletal structure, small or weak mammay systems and excessive amounts of flesh.
4. Production records which should be considered in selecting dairy cattle should include total amount of milk produced, percentage of butterfat and feed conversion ratio.

IV. **Supplementary Activities:**

A. Have a local dairy producer speak to the class and discuss her/his selection and culling program.

B. Conduct a simple dairy judging contest. If possible live animals should be used. If not, slides or pictures of animals could be substituted.

VI. **Supplementary Learning Aids:**

A. Transparency Masters

1. TM 14a Parts of the dairy cow.
2. TM 14b Ideal Udder Conformation.
3. TM 14c Defects in Udder Conformation.
4. TM 14d Dairy Cow Unified Score Card.

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LESSON 15

Selecting Hogs

I. **Introduction:**

As is true of beef and dairy cattle, considerable variation exists within individuals in any given breed of hogs. Because of this fact, the perfect hog breed has yet to be developed and the hog producer must depend upon visual inspection and available production records in selecting animals for the brood house or the feeding floor.

The lesson is designed to introduce the student to the processes of selection of high quality meat-type hogs.

II. **Objectives:**

A. **Terminal objective.** Upon completion of this unit, the student should be able to distinguish high quality hogs from lower quality hogs.

B. **Specific objectives.** Upon completion of this unit, the student should be able to:

1. Define new terms associated with hog selection.
2. Identify the external parts of a hog.
3. Identify the wholesale cuts of a hog carcass.
4. Describe the ideal meat type hog.
5. Describe common defects in hogs.
6. Describe other methods of hog selection.
7. Distinguish high quality hogs from lower quality hogs.
8.
9.
10.

III. **Instructional Procedures:**

Teaching Tasks	Steps to Accomplish Tasks
A. Prepare for class.	1. Review entire lesson and determine if additional material is needed. 2. Make transparencies.
B. Introduce the lesson.	1. Discuss importance of judging and selection in hog production. Refer to Introduction. 2. Identify Lesson Objectives. 3. Discuss and define new terms found in Section A of Learning Activities.
C. Identify the parts of a hog.	1 Discuss the names of the parts of a hog as shown in TM 15a. 2. Emphasize most important parts including jowl, fore flank, belly, hind flank, stifle, hock, rump, back, loin, and ham.
D. Identify the wholesale cuts of a hog carcass.	1. Discuss and identify major wholesale cuts of a hog carcass as shown in TM 15b. 2. Place emphasis on prime or major cuts including the ham, loin, and shoulder.
E. Describe the ideal hog.	1. Discuss material found in Section D of Learning Activities. 2. Refer to TM 15c for an example of an ideal type hog. 3. Discuss factors to consider in selecting breeding stock.

Teaching Tasks	Steps to Accomplish Tasks
F. Describe common defects found in hogs.	1. Discuss material found in Section E of Learning Activities. 2. If possible obtain photographs of defects.
G. Discuss other methods of hog selection.	1. Discuss Production Registry Program for use by purebred producers. 2. Discuss Mississippi Advanced Pork Production Program for use by commercial producers.
H. Conduct a simplified judging contest.	1. Use live animals, pictures or slides to allow all students to judge a class of hogs and select a top animal and a low animal.
I. Summarize the lesson.	1. Discuss material in Lesson Summary.

IV. **Learning Activities:**

A. **New terms and definitions:**

1. **Dressing percentage** — The percentage of total weight of an animal which remains after the animal has been slaughtered and is ready to be cut into the wholesale cuts of meat.
2. **Feed conversion ratio** — The ratio of pounds of feed fed to pounds of weight gained. A ratio of 1 to 3.5 means that for each 3.5 pounds of feed the animal eats, 1 pound of weight gain results.
3. **Backfat thickness** — The depth of the fat layer found on the back of a hog.
4. **Loin eye area** — The area of the loin muscle as measured at the shoulder end of the loin.

B. **What are the parts of a hog?**

Figure TM 15a identifies the parts of a hog using the most commonly used names. Prior to selecting hogs, the producer or student should become thoroughly familiar with these terms.

C. **What are the wholesale cuts of a hog carcass?**

In Figure TM 15b, a hog carcass is shown with lines indicating how a butcher would cut the carcass into wholesale meat cuts. The most valuable wholesale cuts on the carcass are the ham, loin, Boston butt, and picnic. A true meat-type hog should yield 45 to 50 percent of the live weight in the ham and loin.

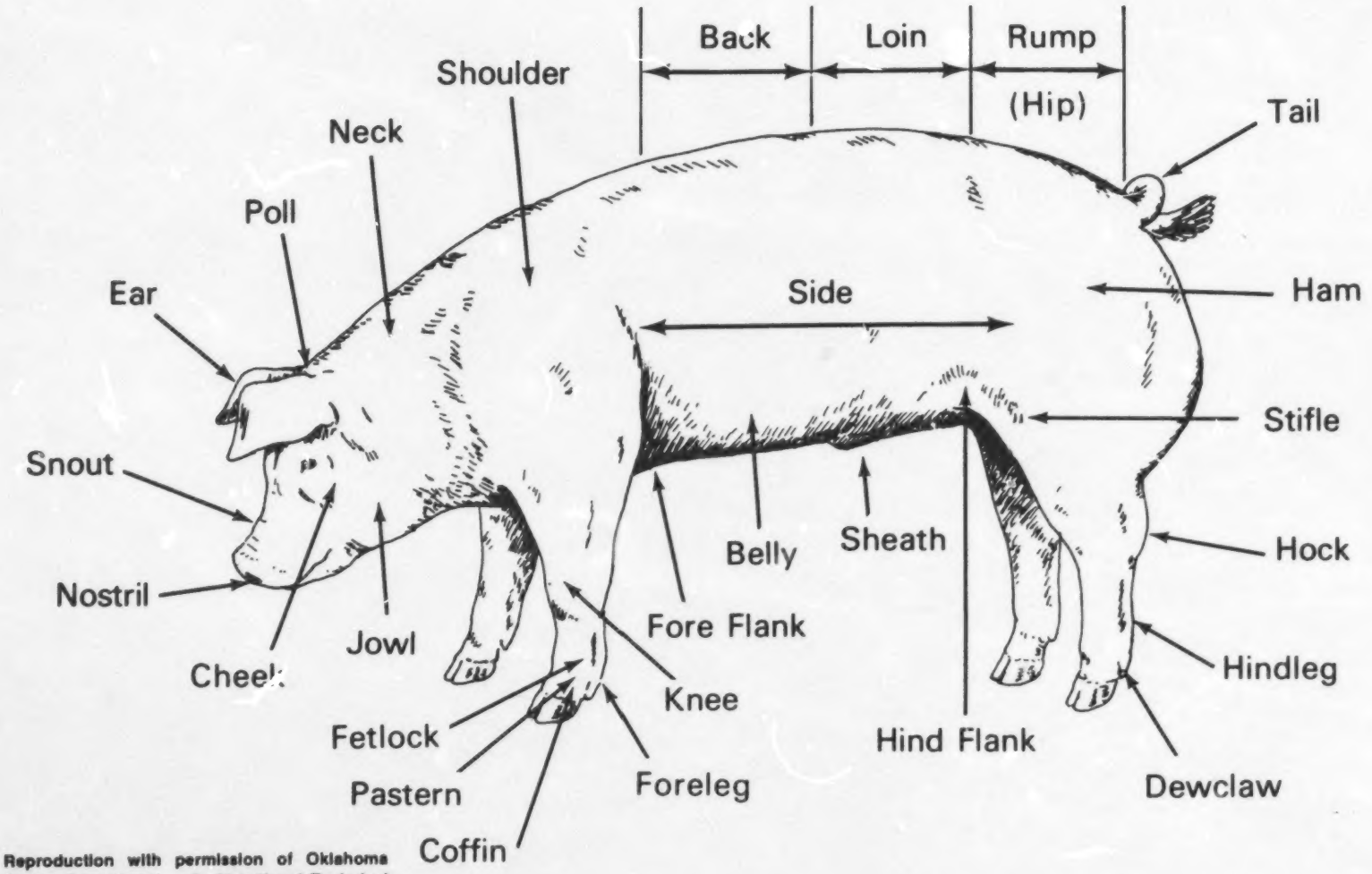
D. **What is the ideal type of meat-type hog?**

The ideal type of meat type hogs can be described as having:

1. A head with a medium length snout and broadness between the eyes and ears;
2. A jowl which is trim, firm, and free from excessive fat;
3. A short thick neck which joins the head and shoulders smoothly;
4. Shoulders which have heavy and prominent muscles, are free of coarseness, excessive fat cover, and wrinkling;
5. A strong evenly arched back and loin with medium width due to the spring of the ribs and not too excessive backfat;

Parts of A Swine

TM 15a



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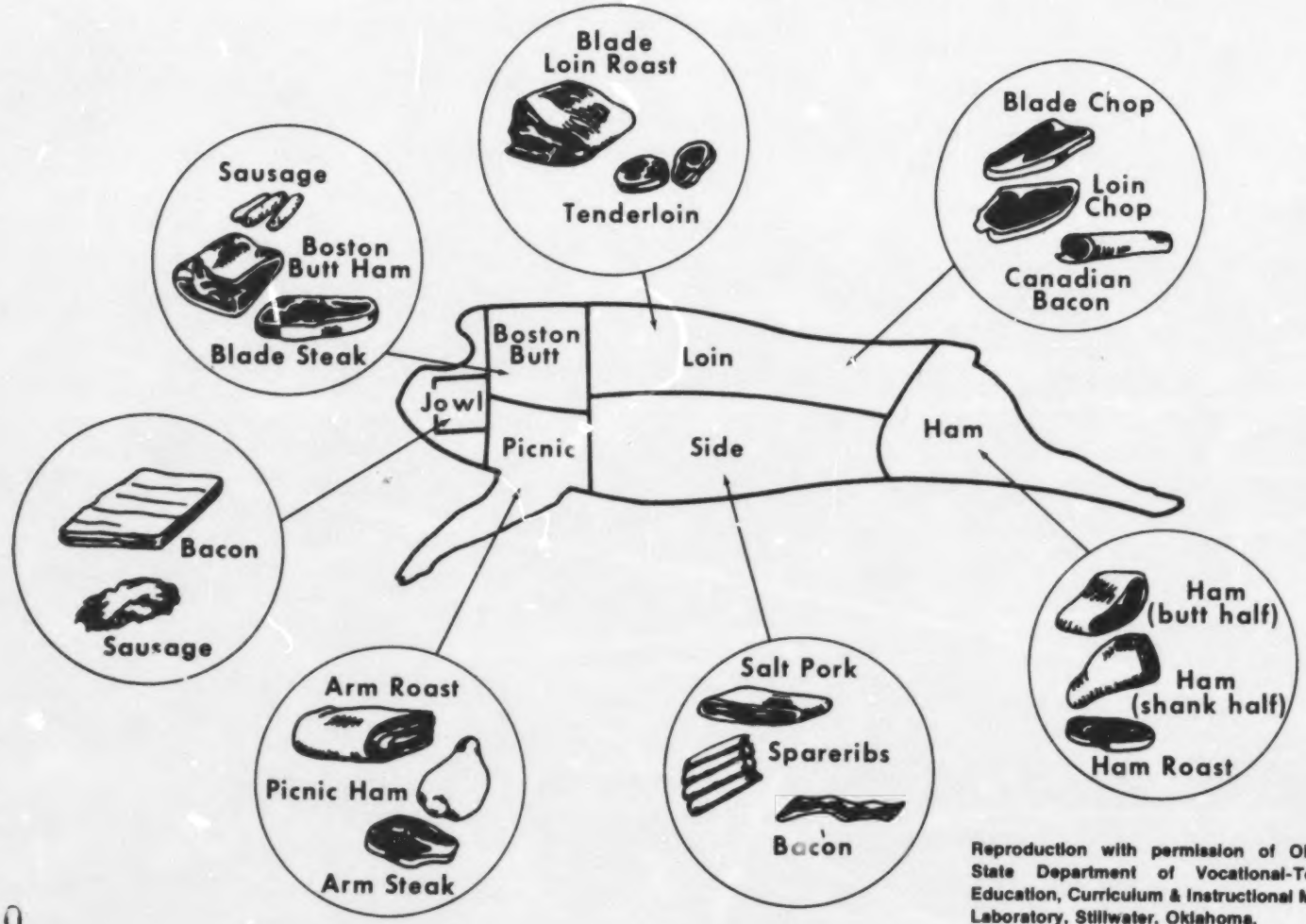
TM 15b

Wholesale Cuts of Pork



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6. Long, moderately deep sides;
7. A trim smooth belly without wastiness;
8. A long, wide, heavily muscled rump which carries out to a high tail setting;
9. Thick, deep, heavily muscled hams with their widest point through their center and a lack of wrinkling from excess fat; and
10. Legs which are medium in length, straight, squarely set, and well apart.

Figure TM 15c provides a sideview of a desirable and undesirable barrow.

In selecting breeding stock, the producer should closely examine the animal's underline. Gilts as well as barrows should have no less than 12 well-developed, uniformly placed teats (six on each side). Breeding hogs should also have strong pasterns, adequate substance of bone, and straight long legs.

E. **What are some common defects found in hogs?**

Usually in judging hogs, the producer should look for some of the following characteristics which indicate a fault or defect in the animal:

1. A short, fat, thick neck and jowl;
2. Flabby shoulders with a roll of fat behind them;
3. A back and loin which are short and poorly arched. The distance from the point of the shoulder to the center of the ham should be at least 29 inches; and
4. A shallow cut up ham which is narrow in the base and cushion.

F. **What other methods are used in selecting hogs?**

In addition to visual judging, several other methods of selection are available to the producer including:

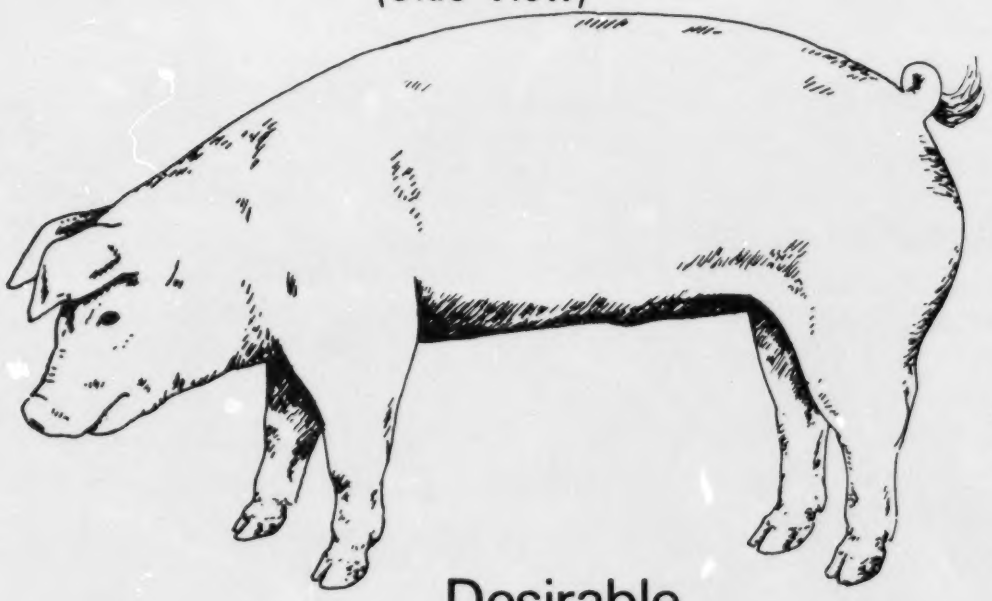
1. **Production Registry Program Records.** This program is used by all breeds to evaluate gilts, sows, and boars. Generally speaking the following qualifications are required:
   a. A sow or gilt must produce a litter of at least eight pigs and these pigs must be raised to an age of 56 days.
   b. The litter at the age of 56 days must weight at least 275 pounds for a gilt and 320 pounds for a sow.
   c. Some breed associations require a minimum birth weight for a litter.

   For a sow to qualify for Production Registry, the animal must produce two litters meeting the above requirements. A boar must sire several litters before being admitted.

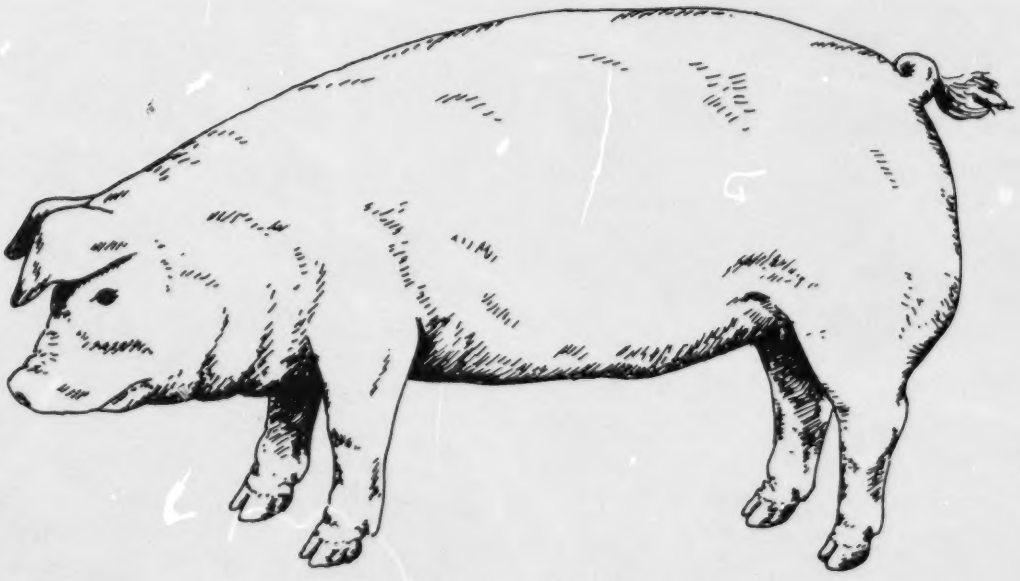
TM 15c

Desirable and Undesirable Barrows

(Side View)



Desirable



Undesirable

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After the sow has been admitted to the Production Registry, the litter can be tested as a Certified Litter. The litter must meet the following qualifications to be certified:

a. At least two pigs from the litter must weight 200 pounds at 170 days of age.

b. These pigs must have 1.5 inches of backfat or less.

c. The carcass of the pigs must measure at least 29 inches from the aitch bone to the first rib.

d. The loin muscle must be at least four square inches at the 10th rib.

Once certification is completed, the letters PR, CMS, and CL can be included on the registration papers. These letters stand for Production Registry, Certified Meat Sire, and Certified Litter.

As noted in the preceding paragraph the Production Registry is designed primarily for the purebred producer.

2. **Mississippi Advanced Pork Production Records.** The program is designed to aid the commercial hog producer in improving his/her herd. Each producer in the state may send five feeder pigs to the testing station at Mississippi State University. Only barrows can be tested and they must be castrated prior to the testing period. The pigs are started on the test when a weight of 35-40 pounds is reached and are fed a 15 percent protein ration. Upon completion of the testing period, the producer receives information concerning the average daily gain and the feed conversion ratio of the animals. In addition one animal will be selected to be judged in the show ring and then slaughtered. The carcass will then be measured in terms of backfat thickness, loin eye area, carcass length, and percentage of ham and loin in the carcass. To participate in the program, the producer must pay a fee.

G. Lesson Summary

Key points to remember:

1. Since considerable variation of quality exists in individuals in all hog breeds, the producer must develop a selection system for obtaining replacements and culling inferior animals.
2. The student should be thoroughly familiar with the terminology used to describe a hog and the wholesale cuts of a hog carcass.
3. The ideal type of meat hog can be briefly described as being long bodied, meaty, and free from excessive fat.
4. Common defects found in hogs include: excessive fat on the jowl, sides, back, and shoulders; poor body length; and a shallow cut-up ham.
5. Production record systems are available to aid the purebred and commercial producer in selecting hogs. Important records used in both systems include average depth of backfat, loin eye area, carcass length, and dressing percentage. Some systems may also provide information on the feed conversion ratio and average daily gain.

V. **Supplementary Activities**

A. Conduct a simplified judging contest. Use live animals if possible or pictures or slides as an alternative. Have students pick the high animal and the low animal in the group. Have students justify their selections by using oral or written reasons.

B. Ask a local hog producer to speak to the class on her/his selection methods.

VI. **Supplementary Learning Aids:**

A. Transparency Masters

1. TM 15a Parts of a Hog.
2. TM 15b Wholesale Cuts of Pork.
3. TM 15c Desirable and Undesirable Barrows.

B. References

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